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# BRITISH MEDICAL JOURNAL

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY DECEMBER 12 1942

# THE PAIN PATHWAYS IN MIGRAINE

BY

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The term "migraine," the derivation of which has been stated by Kinnier Wilson (1940),* is probably best used in a clinical sense to denote a particular variety of headache and not with a pathological implication suggesting that the physio-pathological processes which cause the head pains are known. The characteristic features of migrainous headaches are unilaterality and periodicity, the pain starting slowly, reaching a peak of severity, continuing at this degree of severity for a varying period of time, and then slowly receding. Most typically, the headache is associated with black spots in front of the eyes, with flashes of light, or with formed and coloured visual hallucinations. There are, of course, many variations. In particular, the pains may be mild or severe: they may or may not be accompanied by visual phenomena: they are often bilateral, and they may radiate into the face or neck.

Headaches of a migrainous type may be divided into two distinct groups: (i) those associated with a demonstrable pathological lesion, such as a cerebral aneurysm; (ii) those which cannot be accounted for by local cerebral change or by gross metabolic disturbance. It is with the latter group only that this communication is concerned.

In migraine, as in other painful conditions, before treatment can be instituted the clinician must have some conception of the nature of the disturbance which initiates the pain cycle, of the site at which the painful impulses arise, and of the anatomical pathways by which painful impulses are conveyed to the brain.

First let us consider the site at which the painful impulse arises. This may be in the brain tissue itself or in one of those structures of the head—the scalp, periosteum, meningeal vessels, the large arteries at the base of the brain, and the dural sinuses—which are known to be capable of reacting in a painful way to an adequate stimulus (Penfield, 1940). From all these possibilities—and, of course, there may be others unknown—the pain of migraine is believed to arise in the arteries of the scalp and dura mater. The reasons for this belief are as follows:

(1) The walls of large blood vessels have been proved to be painful, and some to possess local sign. When operating under local anaesthesia, crushing of the trunk or of the large branches of the meningeal artery will cause extreme discomfort, and the patient will be able at least to "lateralize" the pain.

(2) Spasm of a large artery will lead to pain. Once when dissecting in the neck under local anaesthesia, in order to carry out cerebral angiography, the internal and external carotid arteries went into extreme spasm. Immediately severe pains were complained of in the same side of the head and face, and the patient slowly developed a contralateral hemiplegia, which equally slowly receded.

(3) Extreme dilatation of an artery will lead to pain. This can be proved by isolating a segment of a large artery in the scalp and by injecting saline forcibly into its lumen.

(4) The vascular changes which accompany migraine. The skin of the forehead in an attack is often deadly pale, the temporal arteries are distended, and there may be associated neurological signs which can only be accounted for by cerebral ischaemia. Occasionally a retinal vessel can be seen to be in spasm.

(5) The experiments on headaches produced by histamine (Clark, Hough, and Wolff, 1936).

(6) The relief of migraine by injections of ergotamine tartrate.

If the vascular origin of migrainous pains is accepted, then it is easy to conjecture on the essential disturbance which starts the pain cycle.

A popular theory is "neurosis of the cerebral autonomic nervous system." This postulates that there is an unstable equilibrium (Hughlings Jackson, 1931) in one or other of the central mechanisms of the autonomic nervous system, such as the hypothalamus, which reacts abnormally to some of the many stimuli that reach it from other parts of the nervous system or blood stream, thereby discharging abnormal impulses to the more peripheral parts of the sympathetic and parasympathetic nervous system (Fig. 1). This theory may

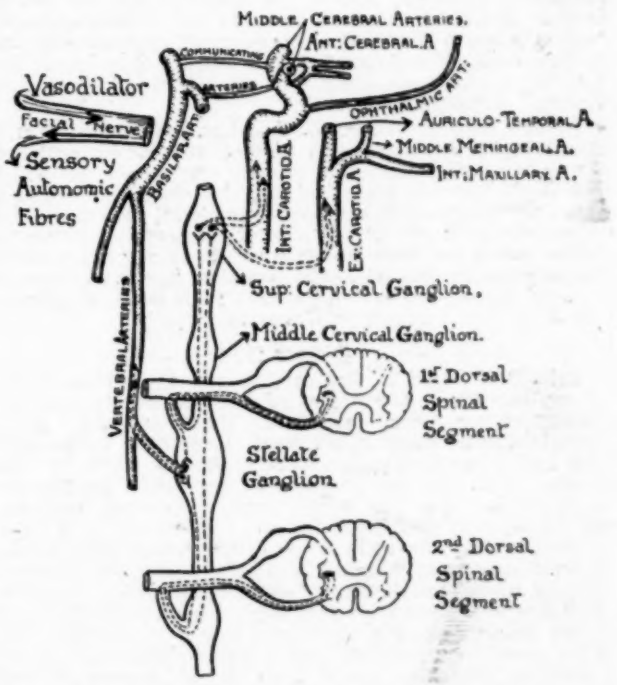


FIG. 1.—The sympathetic innervation of the blood vessels of the brain, dura, and scalp.

explain why the so-called causes of migraine already described are legion. It will be seen, however, that the nature of the original disturbance which causes migraine and the site at which the painful impulse arises are essentially matters of speculation.

* "Migraine is derived from Galen's ἡμικρανία through L. hemicranium and L.L. hemigranea, later migranea. In England hemigranea became mygrame, myegrym, migrim, and megrim. Migraine itself is French."

The last point to be considered is the pathway by which the painful impulses are conveyed to the brain. Do these impulses pass to the brain stem by way of the known or rather by way of the described autonomic pathways or otherwise? An attempt to answer this question will be found in the following series of cases.

### Case I

Mrs. J. S. reported to me at the Salford Royal Hospital on July 12, 1940, complaining of migraine which she had had for many years and for which she had received treatment by Dr. Don and Prof. Jefferson. Her pain was chiefly right-sided, but occasionally the left side was affected. Typically, it would come on suddenly in the region of the forehead, rapidly spreading to the eye and to the back of the head. Often it would travel down into the cheek but never as far as the lip. In severe attacks she would vomit and the sight in the right eye would become dim. The pain often lasted for a week or more, when she might be incapacitated for several days and be confined to bed.

On examination she proved to be a well-built little woman, aged 40, with no emotional complexes and of good average intelligence. There were no abnormal neurological signs, and special investigations failed to reveal any pathological change to account for her pain. The diagnosis of migraine, made by other competent observers, was confirmed, and later I saw her in a typical attack. She insisted that something surgical must be done to give her relief, as all kinds of medical therapy had failed. Therefore I discussed with her the possibilities of thoraco-cervical sympathectomy and trigeminal root section, but before deciding to operate persuaded her to submit to a further course of medical therapy, including injections of ergotamine tartrate. Again the recognized forms of treatment, adequately administered, failed to satisfy her.

On the afternoon of Sept. 3, 1940, I operated on her under general anaesthesia in the sitting position, and divided the upper and inner third of the right trigeminal root, through the lateral extradural approach of Frazier. At the end of the operation she was conscious, and the next morning was perfectly well and fully co-operative. The denervation was satisfactory, the anterior two-thirds of the scalp on the operated side being numb, as well as the upper part of the cheek. A Buller's shield was fixed in position to protect the insensitive cornea. The immediate result was excellent; she felt easy and confident. From the time of the operation she has not had another attack of migraine, although she does complain of tingling pains at the junction of the numb and sensitive areas in the cheek. The following is an extract of a report from Mr. Wyse, resident surgical officer of the Salford Royal Hospital, dated June 18, 1942:

"I saw Mrs. S. yesterday. She has had a very worrying time recently, having lost her mother, and she states that she would never have been able to carry on had she not had her operation. She has never had migraine since, she states; and says that the operation has been a wonderful success. She gets occasional pains in the right side of the forehead in the form of hot stabs, but these do not worry her. She has practically no pain on the left side. She feels her face a bit numb and stiff, of course, and says the cheeks swell badly at times, but she has had no trouble with the right eye."

### Case II

Miss D. R., aged 25, first came to see me on Nov. 23, 1935, at my out-patient department of the Christie Hospital at the request of her general practitioner, Dr. Friedlander. She was complaining of pains in her head, which were so severe that she had been completely disabled and off work for several weeks. The pain was so bad that her doctor thought in the early stages that she might have a cerebral tumour, or an obstructive hydrocephalus due to meningeal adhesions. Typically, the pain started low in the right temple as an indefinite ache, then travelled across the eyebrow to the middle line, at which time it became exceedingly severe. She likened the pain to the sensation that might be felt if something were being driven hard into the frontal bone. At no time did she have visual hallucinations, but in some attacks felt so ill and nauseated that she would lose several pounds in weight. Occasionally she had pains on the left side of the head, but these were much less severe than those on the right and certainly were much less frequent.

Examination showed her to be a thin little woman who looked about 18 rather than her 25 years, and weighed only 6 stone. Intellectually she was well above the average. She was rather highly strung, but enjoyed life and had no psychoneurotic tendencies. Apart from a moderate degree of hyperreflexia, there were no abnormal neurological signs to point to any focus of organic disease in her brain; also special investigations revealed no abnormality. A diagnosis was made of migraine, and she was put on a further course of medical therapy, including injections of ergotamine tartrate. In May, 1939, she declared that medical treatment, which I believe was correctly administered, had not given her satisfactory relief, and she asked for something further to be done. I therefore discussed with her the possibilities of fractional trigeminal root section, alcohol injection into the Gasserian ganglion, and thoraco-cervical sympathectomy. It was decided to divide the upper fibres of the posterior trigeminal root.

On May 11, 1939, under general anaesthesia, I divided the ophthalmic fibres in the right trigeminal root and also the second division of the trigeminus at the foramen rotundum by the lateral extradural approach of Frazier (Fig. 2). A rapid

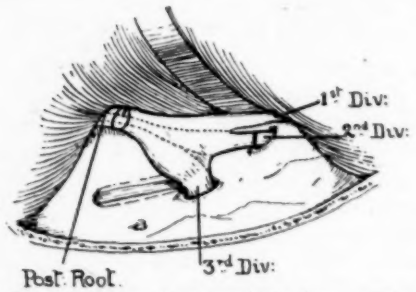


FIG. 2.—The trigeminus in the middle fossa. For the treatment of migraine usually the ophthalmic fibres only in the posterior root are divided. In some cases, however, it is also necessary to divide the second division at the foramen rotundum.

and uninterrupted recovery was made from the operation. The trigeminal denervation was satisfactory. Anaesthesia was present in the first and second divisions of the trigeminal field, the third division being spared.

Since the operation, in spite of loss of sensation in the cornea, there has never been any suggestion of keratitis (ulceration of the cornea), and this is due to the eye remaining moist, the nerve of tear secretion—the great superficial petrosal nerve—having been spared at the time of the operation (Rowbotham, 1939).

There was complete relief of pain until Sept. 20, 1939, when at the end of a period of menstruation a pain was experienced on the right side of the head (that is, the side operated on). The pain was much less severe than before the operation, and lasted for a shorter time. Moreover, it was changed in character, being now described as a hot rather than as a deep pressing sensation. In spite of this recurrence of pain Miss R. stated that she "was a different girl" and quite able to do her work, whereas before the operation she had been seriously incapacitated. In Oct., 1940, she was still very satisfied with the results of the operation. The following is the latest report from her, dated Aug. 1, 1942:

"You will, I know, be just as pleased to hear, as I am to write, that I am quite a different and happier person from what I was a little over three years ago, thanks to the complete relief from pain effected by the operation which you performed."

### Case III

Miss M. U., aged 48, reported to me at the Christie Hospital in April, 1939, complaining of severe pains in the right side of the head, from which she had suffered periodically for three years. In character the pain was a severe ache, and at its peak would affect the whole of the right side of the head, radiating into the eye and upper part of the cheek. The headaches were accompanied by nausea, although she never vomited; sometimes she noticed black spots in front of her eyes. On rare occasions she had attacks of pain on the left side of the head.

On examination she was seen to be a thin miserable-looking woman of an obviously neurotic disposition. Moreover, she was a spinster, and it was suspected that the pain might be psychogenic in origin. Clinically, there were no abnormal neurological signs to point to any cerebral change to account for her pain, and special investigations were negative.

A provisional diagnosis was made of migraine, and this was confirmed by keeping her under observation in hospital. Medical therapy failed to give her any lasting relief. With some hesitancy I decided to sever the upper fibres of the right trigeminal root. On April 27, 1939, under general anaesthesia, I divided the ophthalmic fibres in the trigeminal root and also the second division of the trigeminus at the foramen rotundum, via the lateral extradural approach of Frazier. After the operation she was anaesthetic in the first and second divisions of the trigeminus, the third division being spared.

The right cornea remained healthy until investigations into the problems of tear secretion were carried out. After this a keratitis developed which necessitated closure of the lids by tarsorrhaphy. For many months this woman was completely relieved of the pain in the right side of the head, but later began to complain of pains elsewhere in the body and, according to her doctor, was beginning to show distinct mental changes.

On Jan. 24, 1942, Prof. Jefferson wrote to me to say that he had seen the patient again. He told me that my operation had completely relieved the pain on the right side of the head but that obvious migrainous pains were starting on the left side. Moreover, she complained of pains elsewhere in the body.

### Discussion

The possible criticism that, in my posterior root section cases, the relief of pain might be due to division of the auriculo-temporal and meningeal arteries is vitiated by the fact that injection of the Gasserian ganglion (Harris, 1936) will give relief, and this does not interfere with the blood vessels concerned. Also, division of the meningeal artery, and presumably also of the auriculo-temporal artery, in some cases of migraine has proved not to give relief (Craig, 1935). Moreover, the auriculo-temporal artery is not necessarily divided in posterior trigeminal root section, and certainly in two of my cases the large trunk of this vessel was not ligatured or diathermized. In any case, the ophthalmic artery is not involved in the lateral approach to the posterior trigeminal root, and it is along this vessel that many migrainous pains presumably arise. Finally, it is unlikely that local interference with a distal mechanism will ease pain of an extensive distribution.

If it is correct that the painful impulses in migraine do, in fact, enter the brain stem along the posterior trigeminal root, then it is still necessary to discuss how they reach the ganglion from the periphery. There are two possibilities—either they enter the ganglion from the autonomic plexus in the region of the foramen lacerum medium or they course along the ophthalmic and maxillary trunks of the trigeminus (first and second divisions). Probably the trigeminal trunks are the anatomical pathways concerned. This opinion is difficult to prove because the critical operation of section of the first and second divisions themselves in a suitable case has never been carried out, for the reason that section of the ophthalmic division (not the ophthalmic fibres in the posterior root) is a very difficult manœuvre, although it can be done (Rowbotham, 1939). In two of my cases, when the pain extended into the face, I sectioned the ophthalmic fibres only in the posterior nerve root, and the second division at the foramen rotundum, with the relief of pain. It must, however, be realized that it is impossible to know precisely how many fibres are being divided when fractional section of the posterior trigeminal root is being performed.

In one case, when a migrainous pain was confined to one side of the forehead, I divided the supra-orbital and supra-trochlear nerves without dividing the supra-orbital vessels, with relief of pain. This is a very simple operation, and is worthy of trial when severe pains are localized to the forehead.

At this point it would be profitable to inquire into the results of thoraco-cervical sympathectomy in the relief of migrainous pains. Unfortunately very few such operations have been carried out for the deliberate relief of headaches, but in cases done chiefly for vasospastic states in the arm, Love and Adson (1936) found that of 16 cases of concomitant headache the headaches were relieved in 12. The efficiency of this method in relieving pain, I find, has been questioned by White (1942) and Telford (personal communication). Whether or not relief is obtained by sympathectomy does not help in settling the route of conduction of the painful impulse, because relief when it is obtained by this operation can easily be explained by destruction of those pathways along which the original disturbance that initiates the painful impulse is conveyed. In other terms, sympathectomy destroys the motor and not the sensory arc of the mechanism of migraine.

My series of cases at least suggest that the painful impulse in migraine passes through the posterior trigeminal root, but they do not prove by any means that this is the main sensory pathway of the autonomic system of the head. Possibly the trigeminal pathway acts purely as a special defence mechanism. The main problem of the sensory pathways of the autonomic system still remains an enigma, and will possibly remain so until better methods of staining autonomic fibres have been discovered.

I have published these cases at this time because they throw light on the state of post-concussional headache, which is one of the main problems in His Majesty's Forces to-day. In many cases of post-concussional headaches no organic cause is demonstrable, either clinically or by encephalography, and many are labelled psychoneurotic or nervous. Possibly in many so-called nervous headaches the pain is not purely one of perception but is due to an unstable mechanism resulting from the injury, leading to atypical migrainous pains. This type of headache in Service cases is, I believe, much more common than the headache due to dural traction the result of adhesions.

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## THE SYNDROME OF HAEMORRHAGIC SUPRARENAL INFARCTION


BY

**DORIS V. KEELE**

AND

**KENNETH D. KEELE, M.D., M.R.C.P.**

*Major, R.A.M.C.*


The syndrome of primary infarction of the suprarenals is very rare, and unilateral infarction has not been described at all. There are only some 14 cases of haemorrhage into the suprarenals in adults recorded in the literature in which any description is made of the clinical picture. None of them were diagnosed in life, even at laparotomy, and all were fatal. The syndrome described in this paper is that produced by thrombosis of the suprarenal vein with resulting haemorrhagic infarction of the suprarenal gland, in an adult. Other causes of haemorrhage into the suprarenal are: (*a*) in the newborn; (*b*) in meningococcal and other acute infections, in which the picture clinically is that of the acute infection: the Friderichsen-Waterhouse syndrome is discussed in differential diagnosis here, and another case added to the 60 already described; (*c*) as a part of a general haemorrhagic state. The thesis put forward is that the suprarenal infarction syndrome is recognizable in life, and possibly treatable.

### Case History

The patient (D. V. K.), an intelligent woman aged 32, was 8 months pregnant. The pregnancy had been normal except for occasional morning vomits, in some of which there had been streaks of blood. Two days previous to the illness the urine was albumin-free and the blood pressure 120/80. On March 28, 1941, at 12.30 p.m., she complained of feeling cold, after which she walked half a mile with no further complaint. Half an hour later pain appeared in the right side below the ribs—persistent, "like a stitch"—which made her put her right hand to the side and bend over to the right. This pain was exacerbated by the movement of the car and by walking. The pain below the right costal margin steadily increased in severity. There was no nausea, and the appetite was good. Pallor and sweating now became evident in spite of a strong pulse of 70 a minute.

*2 p.m.*—Patient restless in bed, in severe pain, which remained the whole time localized to a spot over the fundus of the uterus to the right of the umbilicus about 2 in. below the costal margin in front. There was no pain in the loin. Vomiting began at this time—copious, free, and sudden. This continued repeatedly until the end. Micturition was natural, and urine showed no haematuria. On examination there was some cold-

ness of skin. Pulse 80, temperature 98°, respirations 20. Patient mentally quite clear. Abdominal tenderness was present at the site of the pain, which was located by her accurately with the finger-tips. There was no rigidity. Pressure on the tender region induced nausea and vomiting. The pain did not radiate or shift in any direction. It was very severe, and restlessness was marked, but it was described as "bearable."

*5 p.m.*—Admitted to the Radcliffe Infirmary and examined by Prof. Chassar Moir and Mr. D. C. Corry. The symptoms and signs remained the same. No abnormal signs were found elsewhere. White cells, 24,000.

*10.30 p.m.*—Laparotomy performed. A scarred adherent appendix was removed. Patient's condition was quite satisfactory until the skin sutures were being inserted, when mucus flowed into the trachea. This became blood-stained, and was followed by a profuse pulmonary haemorrhage, from which she died in spite of cardiac massage and tracheotomy. Caesarean section was performed, but the infant was dead.

*Post-mortem Examination by Dr. Robb-Smith.*—No abnormality was found apart from the lungs and the right suprarenal. Lungs showed diffuse haemorrhage filling the bronchioles in the substance of both. No evidence of active tuberculosis was found, though there was the scar of an old healed focus at the right apex. The heart was normal, the right ventricle empty. The right suprarenal was the size and colour of a large plum. The tissues surrounding this were very tense, so that when the organ was cut with a knife there was a sudden spurt of blood-stained fluid under pressure. The left suprarenal gland was normal. On examining the veins a thrombus was found extending along the suprarenal vein from its protrusion into the inferior vena cava. The thrombus in the large vein was older than that in the smaller branches by some 2 to 3 days. Blood culture was negative.

*Summary of the Case.*—The outstanding points are: (1) the gradual onset with "feeling cold"; (2) the ingravescent nature of the pain, growing in about two hours to great severity, and its accurate location; (3) the severity of vomiting, such that intestinal obstruction was seriously considered; (4) the absence of shock and of purpura; (5) exploratory laparotomy failing to make a diagnosis; (6) the death through pulmonary oedema progressing to profuse haemorrhage. Pathologically the case is unique in that there is none described with infarction of the suprarenal on the right side only, consequent on primary thrombosis of the suprarenal vein.

## Diagnostic Criteria

The salient question is that of diagnosis. Is there a picture on which diagnosis of infarction of the suprarenal can be based? On retrospect it is my belief that in this case, and in some others collected from the literature, diagnosis is possible—that there is a clear-cut syndrome here which is not yet generally recognized. This rests mainly on: (1) the characteristics of the pain; (2) the severity of vomiting; (3) the surprising absence of "shock."

1. *Characteristics of the Pain.*—Both authors of this paper had been interested in the subject of pain over a period of some years. For this reason the description given by D. V. K. at the time of her illness was deliberately shaped to comply with Ryle's ten points (Ryle, 1936), which form the standard clinical description of pain. In the production of pain as a symptom, sensitivity is obviously a factor to be taken into consideration. For some years sensitivity to pressure pain has been used as a clinical guide to this factor, which it is believed is of definite significance (unpublished work). In the case of D. V. K. many tests had been made at various intervals of time, including four during the 8-months period of pregnancy designed to ascertain whether there was any detectable alteration in sensitivity during that period. Sensitivity to pain measured thus was near the average of 100 normal people in the case of D. V. K. For this reason, and because of her knowledge of the relevant features of pain, her evidence is of singular value from the diagnostic point of view. The pain in this case had the following characteristics:

*Onset* was gradual, not sudden, accompanied by a feeling of coldness. *Site:* From the first and during the whole 12 hours of the illness it was localized to a point to the right of the umbilicus about 2 in. below the costal margin. Location was accurate to an area about the size of a half-crown. There was no *shift* or *radiation*. *Severity:* At first mild in degree, it steadily increased until it was of great severity; but at its worst it was described as "bearable" by D. V. K. *Character:* First described as a "stitch"; later the word "cramp" was used. *Duration:* At all times it was persistent. And from its commencement until she was anaesthetized the pain never left her, except at the end of two hours for a brief period of about 2 minutes, when she surprisedly exclaimed that it had vanished. Then it returned with increased intensity. *Relief:* Nothing relieved completely. At first bending to the right appeared to be a more comfortable position. Veganin gr. 10 failed. Heroin gr. 1/12 gave some relief. *Aggravation:* Pain was made worse by any movement such as walking or the movement of the car. Pressure on the fundus of the uterus produced acute pain and nausea with vomiting. *Accompanying symptoms:* A feeling of cold preceded the pain. Vomiting occurred after about 3 hours, becoming persistent and repeated until operation. It had no marked effect on the pain. Micturition was free. There was no dysuria. The temperature remained between 98° and 99° F. throughout, the pulse about 80. *Tenderness* was located with the finger-tips to the area previously described, to the right of the umbilicus. There was hyperalgesia of the skin in this region. No rigidity was detected at any time. No pain or tenderness was present in the loin or in the region of the posterior renal angle.

2. *Vomiting.*—This was a symptom which obscured diagnosis. Starting about 3 hours from the onset, it was copious without retching, almost projectile in character, and repeated; there appeared to be little nausea between, when fluids were well taken. And in spite of it dehydration was not marked. Its character and persistence suggested intestinal obstruction.

3. *Absence of "Shock."*—This is so surprising as to merit a prominent part in the clinical picture: it is a finding so completely opposed to expectations in a patient with suprarenal disease, and with vomiting of the severity mentioned. Blood pressure was unfortunately not recorded during the few available hours, but three observers remarked on the full normality of the pulse at the wrist. Two days previously blood pressure was 120/80, and there was little detectable difference on palpating the pulse then and during the illness. The pulse rate never exceeded 88 in the half-hourly records taken over the last 6 hours. A white cell count showed a leucocytosis of 24,000.

## The Clinical Picture in Other Recorded Cases

The above clinical picture is confirmed when analysis is made of the few available clinical records of similar cases, though it will be seen from the Table that many points are unfortunately omitted in these descriptions. Only one case, Arnaud's (1900), has been found which is comparable (Case 2)—that of a girl of 17 who developed symptoms 11 days after a severe burn. Here the pain is described as "epigastric." One feels that the word covers a wide area of abdominal wall which might well include the site described in the present case. Apart from this possible discrepancy there is similarity in the picture, so far as it is described, in the severity of the pain, the vomiting, and the duration of some hours.

In Case 3, described in detail by Pearl and Brunn (1928), there was haemorrhage into the right suprarenal, followed 7 days later by haemorrhage into the left. For its first phase this case, therefore, is similar: there was sudden onset of severe pain, which was first in "the right kidney region" and on the second day "under the ribs," with tenderness "in the region of gall-bladder." The advent of the left-sided haemorrhage was indicated by pain in "the left flank and under the ribs." Other points of similarity about this case are the absence of abdominal rigidity and of shock. Even on the 12th day of the illness the blood pressure was 120/80, and both suprarenals had by then been affected. Temperature, pulse, and respirations were all normal during the first day. In Cases 4 to 10 both suprarenals were involved. It is obvious that in these cases the combined areas of pain each side of the umbilicus might be described as "epigastric." Actually it will be seen that 3 are so described—one as "diffuse," one as in the "left kidney region," and one as under the costal margin, left first and then right. The last—Case 10—had no pain, but was tender under the costal margin.

Now to summarize regarding the characteristics of the pain. The localization was definite and in an unusual site in the present case. From the 10 cases quoted, in 4 this same site is described and identifiable; in 5 others the word "epigastric" or "diffuse" is used. These words at least localize the pain to the front of the abdomen rather than the flanks, and inaccuracy of observation may well account for lack of more precise siting. In one the pain is described as in "the kidney region" only. It is my opinion that this area of suprarenal pain is definite and probably of as much diagnostic value as

pain and tenderness over MacBurney's point in the right iliac fossa. Observation of further cases will of course settle the issue. Pain in the loin is not as constant as in the anterior site.

The absence of rigidity is almost a constant finding in all the cases even after some days' duration, at a time when other abdominal catastrophes are almost certainly productive of this sign. Temperature, pulse, and respiration rate all remained normal in the majority of those cases in which they are recorded. In Pearl and Brunn's (1928) case fever is recorded on the 7th day. In Hall and Hemken's (1936) case

### Differential Diagnosis

The main diagnostic problem is anatomical. In the case of infarction into the right suprarenal, diseases of the pleura, the gall-bladder, kidney, appendix, and alimentary tract are possible sources of diagnostic difficulty. In the case here described the uterus was enlarged by 8 months' pregnancy, and the provisional diagnosis made before laparotomy was that of a twisted ovarian cyst, or degenerating or twisted fibroid. A comparison of the picture described in the case history shows on retrospect the differences between most of these conditions and suprarenal infarction. These differences lie in the characteristics of the pain, which is not like a colic, and the site of which does not correspond to gall-bladder or renal pain, and is too high for the pain of appendicitis. The strict localization and the absence of radiation are both positive evidence of the suprarenal origin of the pain. The vomiting suggests intestinal obstruction, and such a diagnosis may be disproved only by laparotomy.

| | Right Suprarenal | | Right Suprarenal followed by Left | | Both Suprarenals | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Case: | 1 | 2 | 3 | | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| Sex | F | F | M | | M | M | M | M | F | M | M |
| Age | 32. | 17 | 45 | | 72 | 30 | 46 | 40 | 44 | ? | 74 |
| Pain site | Below rt. C.M. | Epigastric | Rt. kidney Rt. C.M. | Lt. kidney Lt. ribs | Epig. | " Diffuse " | Epig. | Lt. kidney | Epig. | Lt. C.M. Rt. C.M. | Nil |
| " degree | V. sev. | V. sev. | V. sev. | V. sev. | V. sev. | Sev. | V. sev. | V. sev. | Sev. | Mod. | — |
| " nature | Persistent | Persist. | Persist. | Persist. | Persist. | Persist. | Sharp | — | — | Persist. | — |
| Tenderness site | Below rt. C.M. | Epig. | Present C.M. | Lt. C.M. | Epig. | Diffuse | — | | Epig. | Under C.M.s | Under C.M.s |
| Rigidity | Nil | — | Nil | Nil | Marked | Slt. | — | Lt. abdo. | Slt. | — | Nil |
| Temperature | 98° | — | 102° } 9th | 102° | 98° | 99° | — | 104° (2nd day) | 95° | 97° | 99° |
| Pulse | 80 | — | 90 } day | 90 | 104 | 90 | — | — | 120 | 100 | 80 |
| Respirations | 20 | — | — | 50 | 32 | — | — | — | 45 | — | — |
| Vomiting | ++ | + | — | — | ++ | + | + | + | ++ | + | Nil |
| B.P. | 120/80 | — | 120/80 | 120/80 | 140/95 | — | — | — | — | — | — |
| Lungs | N.A.D. | — | — | — | Rales | — | — | — | Rales | — | — |
| Mental | Clear | Syncope | Clear | Dull | Clear | — | Clear | Clear | — | Clear | Clear |
| White cells | 22,000 | — | — | 16,000 | 20,000 | — | — | — | 52,000 | — | — |
| Haemorrhage: Purpura | Nil | — | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| Haemorrhage: Elsewhere | Pulmonary | — | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil | Nil |
| Duration | 12 hrs. | Hours | 7 days | 6 days | 10 hrs. | 4 days | ? mths. | 2 days | 36 hrs. | 21 days | 14 hrs. |
| Remarks | | 11th day after burn | | | Carc. of bronch. | | | | Pancreatitis too | | Ch. nephritis |
| Reference | Keele | Arnaud | Pearl and Brunn | | Altschule | Barsoum (1936) | Goolden (1857) | Hall and Hemken | Lavenson | Hektoen (1909) | Michaux and Marzet |

Add 2 cases found in coma—both adrenals involved—and 2 cases in lunatics. C.M.=Costal margin.

fever of 104° F. was present terminally. The pulse rate remained below 100 in 5 out of 7 cases. In the one case (No. 8) where it was 120 there was accompanying pancreatitis.

Respirations in the present case were not raised until operation, when the patient showed distress under the anaesthetic. In the only other cases in which the rate is quoted it was 50, 32, and 45 per minute. These high rates suggest the presence of pulmonary congestion, though limited to a stage not revealed, as in the present instance, by profuse pulmonary haemorrhage. Basal rales were found in 2 cases. Vomiting of severe degree formed a prominent feature of the syndrome in 8 of the cases. It is mentioned as severe in 3 cases, and in only 2 is it omitted. Blood pressure is recorded in only 2 instances. Such readings as 120/80 and 145/95 correspond with the absence of the signs of shock found in most cases. In the present case it is probable that there was little change from the pressure of 120/80 taken before the illness. The mental state of all patients was clear, except in Case 2 after a week's illness. This contrasts with 4 other cases quoted—two by Arnaud and Laignel-Lavastine in which the patients were found in coma, and two occurring in lunatics (Munson, 1907; Severn, 1923)—a melancholic and an idiot. The white cell count has been found raised in all 4 cases in which it has been recorded. Figures of 24,000, 16,000, 20,000, and 52,000 raise the question of infection, but are equally well accounted for by infarction. Haemorrhage, either purpuric or from other organs, has been absent in all cases, except in the present one, in which it was terminal from the lungs. There was no evidence of any haemorrhagic diathesis in the case of D. V. K. Tonsillectomy had been performed 8 years previously, being followed by a miscarriage without abnormal haemorrhage. The absence of purpura in all cases is a point of interest, bearing in mind its constancy as a part of the Friderichsen-Waterhouse syndrome.

The duration of the illness has been variable. In 4 of the 10 cases death has occurred in less than 24 hours. In the others the illness has lasted from 36 hours to a period of months. This indicates that there must be all degrees of infarction. In fact, it is known that sometimes blood cysts are formed. Arnaud quotes a case in which a cyst weighing 4 lb. was found post mortem. The suprarenal tissue was entirely destroyed. The patient had had attacks of pain for a period of years, presumably due to repeated haemorrhages.

Exploratory laparotomy was performed in 4 cases. In none was the diagnosis made at this time. This raises, in my opinion, the most important feature of all. In an exploratory laparotomy, if the usual sites of acute abdominal conditions are found to be normal then the suprarenals should be examined. In most cases palpation alone will suffice, since when there has been haemorrhage the gland is the size and consistency of a large plum. If doubt still remains it would be possible to inspect the region. Retroperitoneal haemorrhage will be visible as well as the plum colour of the infarcted gland itself.

Arnaud, in his classification of the picture of suprarenal haemorrhage in adults, describes three clinical types: (1) Peritoneal type, into which fall the cases here discussed with abdominal pain and vomiting. (2) Asthenic type, characterized by asthenia alone, leading to death: the exitus of the two psychotic cases suggests this type. (3) Nervous type, in which the patient is found in coma or delirium, and is seen post mortem to have no cerebral lesion, but bilateral suprarenal haemorrhages: into this group fall the two cases of Arnaud and Laignel-Lavastine mentioned above. Differential diagnosis in Groups 2 and 3 must be considered impossible. Lavenson (1908) and Keith Simpson (1937) add the type in which sudden death occurs with no ascertainable cause and in which bilateral suprarenal haemorrhages are found post mortem. All these types occur in adults. In none of the cases quoted is there evidence of infection being the causative factor.

Causes of suprarenal haemorrhage may be classified as follows: In children two main types occur:

1. *Haemorrhage into the Suprarenals in the Newborn.*—Birth trauma is undoubtedly the cause here. Of 8 cases described by Levinson (1935) 6 were breech deliveries and 2 Caesarean sections: the latter two infants had been slapped on the loins to revive them. Owing to the involution of foetal cortex about the time of birth and its replacement by vascular tissue in a

loose stroma, haemorrhage is facilitated at that stage by trauma. Even in this type, however, operation proved successful in the case of Corcoran and Strauss (1924), in which laparotomy was done for a mass palpated in the left loin and left iliac fossa, and a bleeding-point ligated. This case establishes the fact that operation is feasible in cases of haemorrhage into the suprarenal. It is probable that small haemorrhages occur which heal and finally end in calcification of the suprarenal or in fibrotic change.

2. *Friderichsen-Waterhouse Syndrome.* — This syndrome occurs in older children. It is typified by the following case, the first of its kind to be seen by me.

> L. R., aged 5 months, was noticed by the mother to be restless and feverish in the night. In the morning a blotchy rash was observed on the forehead; no vomiting; drowsiness was present during the last hour. Examination showed extreme cyanosis, large purpuric patches all over the body; pupils unequal and fixed; tachycardia about 150; vomiting. Within an hour the child went into coma and died. Necropsy showed bilateral haemorrhage into both suprarenals. The brain and other organs were normal, except that there was congestion of both lungs. Blood culture was not done and the veins were not examined for thrombosis.

This clinical picture is in contrast to the syndrome in the adult due to infarction where there is no purpura, cyanosis, or delirium. The Friderichsen-Waterhouse syndrome occurs also in adults, and recently I have seen a typical case in a man aged 23, who came into hospital with purpuric patches, confluent on the feet and some 2 in. in diameter on legs and arms. This patient became comatose while being examined, at which time his blood pressure was only 70 mm. Hg systolic. Blood culture showed meningococci. He recovered on sulphapyridine therapy. This picture cannot be confused with the cases of primary infarction of the suprarenal gland. The purpura is in these cases the result of injury to capillary walls by the meningococci, which can be cultured from the purpuric patches. The two comatose cases described by Arnaud and Laignel-Lavastine might well fall into this fulminating meningococcal group.

Thrombosis of the suprarenal veins may occur in such patients and give rise to abdominal symptoms, which, however, will be obscured by the patients' mental state. Other organisms besides the meningococcus may produce suprarenal haemorrhage with purpura—but very rarely.

3. *Thrombosis of the Suprarenal Vein.*—This, according to Hall and Hemken, is the commonest cause of suprarenal haemorrhage in adults. It presents the syndrome of suprarenal infarction here described.

4. *Any Generalized "Haemorrhagic" Condition.*—This may show haemorrhage into the suprarenals. Such is the case, described by Lewis (1921), in an infant of 3 weeks which died of convulsions 5 hours after an operation for hare-lip. At necropsy, haemorrhage was found into pancreas, lungs, suprarenals, and other organs.

From this description of the types of suprarenal haemorrhage it will be seen that each presents a fairly distinctive clinical picture. These four groups summarize the clinical pictures in cases of fatal suprarenal haemorrhage. It has been shown by Snelling and Erb (1935) that in the newborn death does not always ensue on haemorrhage. Suprarenal glands examined later in life have shown calcification and haemosiderin deposition—i.e., evidence of previous haemorrhage. This calcification may be visible radiologically.

No similar case has been reported in adults, but now that cases of fulminating meningococcal septicaemia can be saved, as in the case described above, such haemorrhages may be expected, possibly with subsequent calcification visible radiologically. It should not be assumed that all cases of calcified suprarenal glands result from tuberculosis. The suggestion is tentatively put forward here that some cases of Addison's disease with "atrophic" or even calcified suprarenals are the result of old haemorrhage into the gland. No such case, so far as is known, has been recorded, but in a case of Addison's disease treated by grafting foetal suprarenal glands into the rectus sheath (Bailey and Keele, 1936) there was dramatic and successful response of blood pressure and symptoms, though not of pigmentation. This patient was last seen 6 years later, quite well. Relevant to the present thesis is that 6 months before her symptoms developed she had had cholecystectomy for abdominal pain. The gall-bladder appeared normal and the patient's symptoms were not improved. Were the symptoms produced by disease of the suprarenals?

## Pathology

Post-mortem findings have been limited to changes in the suprarenals in most cases. Carcinoma of the bronchus was an associated finding in Case 4 (Altschule, 1939). Pancreatitis obscured the clinical picture in Case 8 (Lavenson's). "Chronic nephritis" was found in 2—those of Michaux and Marsset and of Lavenson. This association has probably more than coincidental significance, as it has been noticed by French workers (Michaux and Marsset, 1923), and recently such a case has been found by Dr. Robb-Smith (personal communication). Pulmonary haemorrhage was observed only in the present case, though congestion was mentioned in Case 8.

Unilateral infarction of the suprarenal has been found only in the present case and one other (Arnaud), in both instances on the right side. In Case 3 the right side was involved first. In Cases 7 and 9, however, the history suggests that the left side was involved before the right. In all cases the suprarenal glands have been replaced by blood, often clotted, contained inside a capsular layer, or (in 5 cases) infiltrating into the retroperitoneal tissues to a varying extent. This infiltration may be extensive and produce a palpable tumour in the flank. Such a case in an infant was operated on and cured (Corcoran and Strauss, 1924).

Histologically the medulla of the gland is completely replaced by blood. In most instances a layer of cortex remains. Thrombosis of the suprarenal vein is an important and frequent finding. In 6 of the 10 cases it is specifically described, and is not mentioned in the others. That this thrombosis of the vein is not a sudden event is shown by the fact that in the present case the thrombus in the main suprarenal vein projected into the inferior vena cava, and was estimated to be from 2 to 3 days old, whereas that in the small venous radicles was more recent. Thrombus had spread, therefore, from large vein to small, and infarction of the gland was so produced.

The cause of death in the present case was the diffuse bilateral pulmonary haemorrhage; in the other cases it presumably was acute suprarenal insufficiency. In the post-mortem findings of cases of Friderichsen-Waterhouse syndrome pulmonary congestion is commonly mentioned, and in view of the present case it would seem that suprarenal insufficiency does produce some change in pulmonary circulation.

## Pathological Physiology in Suprarenal Infarction

Symptom production in suprarenal infarction and biochemical changes that ensue are shrouded in mystery and complexity. The pain in the right side is of the "referred" type. Its accurate location corresponds with thoracic segment 10. It results either from afferent stimuli passing up from the medulla of the gland itself or from retroperitoneal irritation. The state of tension of the gland from which blood spurted post mortem and the mild degree of retroperitoneal infiltration would favour the first hypothesis in the present case. The medulla of the suprarenal receives a large number of sympathetic fibres that come from the coeliac ganglion and plexus, which incorporates the two splanchnic nerves on each side. Fibres to the suprarenal are plentiful and mostly preganglionic, and medullated. From the site of pain in the present case it seems justifiable to suggest that the segment from which the outflow occurs is Th. 10.

The vomiting is remarkable, and no easy explanation is available. One can only compare it with the crisis in Addison's disease, the mechanism of which is imperfectly understood. Pulmonary haemorrhage is even more difficult to account for, though it is obviously related in some way to the acute suprarenal insufficiency. To try to say how related would be merely to indulge in guesswork. It does appear, however, that there is no reason why this patient should have died if pulmonary haemorrhage had not occurred, since the other suprarenal was intact. But possibly it, too, would have become infarcted, as happened in Pearl and Brunn's case.

Biochemically there is no evidence at all as to what changes are taking place in such acute suprarenal disease. In adrenalectomized dogs detectable changes in blood chemistry do not occur until the second day at the earliest. This applies to values of blood cholesterol, sugar, urea, sodium, potassium, and chloride; nor does blood pressure fall or pulse rate rise until the second or third day. These findings are curiously

confirmed by the clinical normality of blood pressure and pulse in these cases of suprarenal infarction described.

The vascular supply of the suprarenal gland is remarkable. Three arteries converge to produce the most vascular organ per gramme in the body. The vein arises from sinusoids in the medulla. Its walls contain a considerable quantity of muscle, and the blood in it is oxygenated, being "arterial" rather than "venous." Occlusion of this large vein results in a haemorrhagic infarction of the gland, which starts in the loose medullary tissue, destroying it completely. The cortex is also destroyed, but often a thin rind of it escapes, helping to form a capsule round the haemorrhagic area. Later this may rupture, the blood spreading down into the perirenal fat and into the retroperitoneal tissues.

The cause of primary venous thrombosis is unknown, though it occurs as a rarity, the portal vein being the commonest of the visceral veins to be affected.

*Pregnancy as a Factor.*—One other case occurring in pregnancy has been found—in a girl aged 18 with hyperemesis gravidarum. No other clinical facts are given; but at necropsy it was seen that haemorrhage was into the left suprarenal more than the right. Thrombosis of the suprarenal vein was marked.


### Summary

A case of haemorrhagic infarction of the right suprarenal gland is described. The clinical picture is compared with that of cases in the literature, and it is considered that this rare condition may be diagnosed in life. The characteristics of the pain—particularly its site, the repeated vomiting, and the remarkable absence of shock—present a well-defined but hitherto unrecognized syndrome.

Differential diagnosis is discussed, with particular attention to other clinical types of suprarenal haemorrhage: (1) haemorrhage in the newborn; (2) Friderichsen-Waterhouse syndrome; (3) haemorrhagic disease. Examples of these are described.

The failure of laparotomy to diagnose cases is noted and a plea put in for exploration of the suprarenals at operation if no other adequate pathological change is found; ligation of a bleeding-point or excision of the gland are measures which might be adopted.


I would like to put on record my deepest gratitude to Prof. Chassar Moir for his great skill and for his kindness to my wife in her illness and to me afterwards. He made available to me all his case notes, and his help has been invaluable. Dr. A. H. T. Robb-Smith has also been most generous in permitting me to have full details of the pathological findings, and in discussing them with me.—K. D. K.

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F. E. Maisel and E. Somkin (*J. Allergy*, 1942, **13**, 397) have published a preliminary report on the treatment of the asthmatic paroxysm with nicotinic acid. They found that (*a*) severe asthmatic attacks were controlled within 3 to 5 minutes, and improvement lasted 3 to 15 hours, in 16 of 21 patients by the intravenous injection of 0.1 g. of nicotinic acid; (*b*) 5 of 9 chronic asthmatic patients were benefited by 0.2-g. doses given orally three times a day before meals and on retiring; and (*c*) 11 of 18 patients receiving intravenous therapy followed by oral therapy showed decided improvement in their asthma. The patients experience a flush and a sensation of heat, then often begin to cough, and expel tenacious mucous plugs. The beneficial effect is thought to be produced by the strong vasodilator properties of nicotinic acid, relieving the bronchospasm or directly affecting the pulmonary vessels, and has no bearing on vitamin deficiency. The patients were mostly beyond middle life, often with a well-marked infective element and not responsive to ordinary allergic methods of therapy. No patient developed any disturbing symptom.

# THE HERRING AS A SOURCE OF VITAMINS A AND D

## A COLLABORATIVE INVESTIGATION


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### Conditions determining Food Value

The importance of a food as a source of any particular nutrient depends primarily on two factors—the amount of the nutrient present and the quantity of the food eaten. Most recent books on dietetics and nutrition include the herring among the "protective foodstuffs," and justify this by referring to its excellence as a source of fat-soluble vitamins (cf. Plimmer and Plimmer, 1938; Bourne, 1941; McDonald, 1938; Mottram, 1938, 1940; McCarrison, 1941). Only Wokes (1941) appears to have had doubts.

Examination of the evidence for this belief is rather disconcerting. In the tables of Fixsen and Roscoe (1937-8, 1938-9) four references are given, and they derive from only three authors, one of whom was reviewing the physiology of the sterols and gave no experimental data of his own. More recent papers have been exceedingly scanty, both in number and in informativeness, though an exception on the latter score may be made for that by Lunde *et al.* (1937), who give values for the body oil of herring as under.

| Condition of Herring | Vitamin (I.U. per 100 g. Oil) | |
|---|---|---|
| | A | D |
| Fresh, winter .. .. .. | 200 to 2,800 | 9,000 to 15,000 |
| Kippered .. .. .. .. | Unaffected | 11,500 to 14,500 |
| Canned and stored .. .. | Decreased | 7,000 to 14,000 |
| Canned, kippered .. .. | Trace | |

These authors do not clearly differentiate between canned herrings that have been submitted to preliminary kippering and those that have not, but they remark that "since kippered herring contains about 12 to 13% of oil, the canned product is a food with . . . a high vitamin D potency." This seems to us to be a conclusion of little practical bearing unless consumption data are also taken into account, so enabling us to assess the importance of the herring as a source of vitamins A and D in the national diet.

From certain figures published by the Herring Industry Board for the year 1937, and made available to us by the kindness of Dr. Magnus Pyke of the Ministry of Food, an idea is to be had of the *per capita* consumption of herrings in this country. It amounted to approximately 1½ oz. a week, of which just under 0.6 oz. was fresh herring. One of us (J. A. L.) has been able independently to obtain a check on these figures, with very satisfactory agreement. The figures for the vitamin D content of herring-flesh oil have little nutritional significance without an accompanying statement as to the oil content of the flesh, which is known to vary considerably. Our own findings, given below, confirm this and cover a range from 3.6 to 20.2% in fresh herring.

The contribution to their average intake of vitamins A and D obtained by the population from herrings clearly cannot be satisfactorily calculated on the basis of published data. We

therefore decided to reinvestigate the matter, examining both canned and fresh herrings.

### Methods of Testing

Vitamin A was determined by the spectrophotometric technique on the unsaponifiable matter separated from the glycerides of the oil; vitamin D was estimated by one or other of the recognized methods of biological assay. The determinations of vitamin A were all carried out in laboratory L. The biological assays for vitamin D were carried out in three different laboratories, though not on any one sample at all of them. In two the line test was used, in the third a radiographic technique; one assay in laboratory R was done by the chemical method of bone analysis. The details of technique and experimental design resembled those recommended in the *British Pharmacopoeia, 1932*, and minor modifications and differences are quite unlikely to have introduced differences in result falling outside the usual range of experimental error encountered in such tests.

### Vitamin D Tests

Two main series of samples and certain special oils were examined. The first series consisted of oils expressed from five different brands of canned herrings, some with and others without tomatoes. All were examined in laboratory C, and two in laboratory G (one of them in two independent assays). Exploratory tests had been carried out at levels based on the vitamin D values reported in the literature for herring body oil, and all produced in the test animals healing quite insufficient for assay purposes. Tests were then made at higher dose levels, the oils being separated in laboratory C by pressing the fish in muslin and removing water by centrifuging. (The exploratory samples had been separated by ether extraction of the tissue, after grinding it with sodium sulphate.) The results obtained with these samples are given in Table I. The

TABLE I.—*Vitamin D in Canned Herring*

| Sample | Brand | Tomato | Oil in Flesh (%) | Vitamin D (I.U.) | | Laboratory |
|---|---|---|---|---|---|---|
| | | | | Per 100 g. Oil | Per oz.* Flesh | |
| 1 | A | + | 23·0 | 750 | 48 | C |
| 2 | B | + | 10·0 | 550 | 15 | C |
| 3 | C | + | 16·5 | 1,720 | 80 | C |
| | | | | 1,980 | 92 | G |
| 4 | C | – | 18·8 | 730 | 35 | C |
| | | | | 2,300 : 1,940 | 120 : 106 | G |
| 5 | D | – | 18·0 | 650 | 33 | C |

* By calculation from preceding two columns.

discrepancy between the values found by laboratories C and G for oil 4 has not been resolved: of the two assays carried out on that sample in laboratory G, the second (the lower) is the more accurate, the limits of error, for P=0.05, being 84% to 119%. The error was calculated from a variance analysis: this assay, which was conducted on 40 animals, exclusive of negative controls, is probably the most accurate of those made on the first series of samples 1 to 5.

It is clear that the values found for the body oil of canned herrings are much below the figures reported in the literature for canned or fresh herrings. This raises the question whether the discrepancy is due to variation in the antirachitic value of the fresh fish, to losses during canning, or to the error of biological assay. In view of the relative consistency of these results, both in themselves and with those reported below, we consider that our values are reasonably correct for the samples examined by us. The results with fresh herrings, given later in this paper, do indeed point to a real difference between the vitamin D contents of canned and fresh herrings, for which we are not able to offer an explanation.

In order to establish that the method of extracting the oil with ether does not give rise to any misleading results, a batch of August herrings containing 15.5% of oil was divided, one fillet from each fish being used for solvent (diethyl ether; S.G. 0.735) extraction of the oil and one for pressure extraction. The resultant oils (samples 6 and 7), which were so prepared in laboratory T, were examined in laboratories R and G. In laboratory R they were compared with the international standard preparation in the usual way, and gave values of 1,800 I.U. per 100 g. (expressed oil, sample 6) and 2,000 I.U. per 100 g. (extracted oil, sample 7). The errors of the logarithms of the potency ratios of oil and standard in the two tests were ±0.00726 and ±0.00758; the difference is perhaps suggestive, but it was found not to be significant (t=0.37, P=0.7). A more elaborate comparison was made in laboratory G, where each oil was fed at 3 doses to 16 animals, so distributed that 96 animals were used in six strictly comparable litter-mate groups. It was found that the relative activities of the two oils were as 1.66 : 1 in favour, curiously enough, of the extracted oil. This confirms the result suggested by the finding in laboratory R; for in this more extensive comparison the error was estimated by means of a full variance analysis, and calculation showed that the difference just has statistical significance (t=2.0, P=sl. > 0.05). The reason for the higher activity of the extracted oil is unknown, although one of us (J. A. L.) has encountered a similar phenomenon with the vitamin A of liver oils. A possibility is partial denaturation of the protein by the alcohol in the ether used for extraction, with a resultant liberation of vitamin D held in some kind of combination with protein. However this may be, the results dispose of any fear that ether extraction, as carried out, had appreciably reduced the vitamin content of the oils tested.

Next, two samples of herring oil were extracted in laboratory T from fresh fish, the method used being identical with that employed in preparing sample 7. The results of the tests on these two samples—8 and 9—are included with others in Table II. The discrepancy between the two assays of sample 8

TABLE II.—*Vitamin D in Fresh Herring*

| Sample | Mth. | Condition, etc., of Fish | Stage of Fish | Oil in Flesh (%) | Vitamin D (I.U.) | | Limits of Error for P=0·95 (%) | Lab. |
|---|---|---|---|---|---|---|---|---|
| | | | | | Per 100 g. Oil | Per oz.* | | |
| 6, 7 | Aug. | Expressed or extracted oil | | 15·5 | 1,900 | 84 | 87 to 114·5 | R |
| 8 | „ | Oil cold-stored for 14 months | ? | 15·2 | 8,300 | 353 | n.e.p. | C |
| | | | | | 3,600 | 153 | 85 to 118 | G |
| 10 | Sept. | + ½ ripe | + II | 17·0 | 7,000 | 243 | 76 to 132 | R |
| | | | | | 5,150 | 258 | 95 to 105 | R |
| 11 | „ | ½ ripe | III | 15·5 | 6,300 | 273 | 78 to 128 | R |
| 12 | „ | Spent | VII to I | 7·7 | 22,200 | 479 | 70 to 143 | R |
| | | | | | 16,500 | 354 | 59 to 169 | R |
| 9 | Nov. | | ? | 12·2 | 6,100 | 210 | n.e.p. | C |
| 13 | Dec. | Recovered spents | | 3·6 | 26,000 | 277 | 75 to 136 | R |
| | | | | | 15,800 | 169 | 70 to 143 | R |
| 14 | „ | „ „ | More advanced than 13 | 7·7 | 16,800 | 363 | 66 to 152 | R |
| 15 | Mar. | Ripe | V to VI | 4·2 | 12,600 | 149 | 63 to 159 | R |
| 16 | July | ½ to ¾ ripe | III to IV | 17·9 | 3,900 | 196 | 72 to 138 | R |
| 17 | „ | „ „ | III to IV | 20·2 | 3,400 | 190 | 73 to 139 | R |

n.e.p.=no evaluation possible.
* By calculation from preceding two columns.

is rather large, but evaluation of its significance has not been possible. The assay in laboratory G had limits of error, for P=0.95, of 84.5% to 118%. In spite, however, of the discrepancy noted, the amounts of vitamin D in these fresh herrings are clearly considerably greater than those found in the five samples of canned herring, or in the two samples (6 and 7) of fresh-herring oil, expressed and extracted, assayed in laboratory R.

The samples in the second main series were prepared in laboratory T from fresh herrings caught at different seasons. Again only the fillets were used (that is, the skin and small bones were retained, but head, tail, and backbone were rejected); they were, like the previous samples, minced, dried with anhydrous sodium sulphate, and rapidly extracted with ether. As will be seen from Table II, they represent fish in various stages; these are indicated in the table by numbers based on the classification of Lovern and Wood (1937). These samples were assayed in laboratory R; the second assay on sample 10 was conducted by the bone analysis (prophylactic) procedure. The figures for samples 6 to 9 are also included in the table for completeness and comparison. Incidentally, it should be noted that the probable limits of error for the assays carried out in laboratory R are likely to have been somewhat underestimated, as no account could be taken of the error of the slope of the dosage-response curve in each test: the calculated limits of error for all assays carried out in laboratory G take this into account. The results obtained in laboratory C were not suitable for the usual type of statistical analysis, and may be a little more inaccurate than those carried out in laboratories R and G.

In spite of certain inconsistencies encountered in these tests, a moderately clear picture is presented by the fresh-herring oils, which appear, as might be expected, to increase in vitamin D content as they decrease in amount (per unit weight of tissue). This tends to level out the vitamin D contents of the flesh, although these still show a range of 84 to 480 units per oz. The average of all eleven samples is 9,400 I.U. (range 1,900 to 26,000 I.U.) per 100 g. oil and 240 I.U. per oz. of flesh.

It is perhaps worth noting that whenever an assay was repeated in laboratory R on a sample of oil previously assayed there a lower value was obtained (samples 10, 12, and 13). The differences were statistically significant for oil 10 (three months' interval, $P=0.02$) and for oil 13 (1 month's interval, $P=0.03$), but not for oil 12 (1 month's interval). It is probably not justifiable to take these figures as in any way proof of the instability of vitamin D in ether-extracted herring body oil, held, like these samples, at 0° C., but they may perhaps suggest the need for care and speed in handling samples of such oils intended for vitamin assay.

### Vitamin A Tests

The figures for vitamin A content are shown in Table III. They were obtained spectrophotometrically at wave-length

TABLE III.—*Vitamin A in Herring*

| Sample | Description* | Oil in Flesh (%) | Vitamin A (I.U.) | |
|---|---|---|---|---|
| | | | Per 100 g. Oil | Per oz. Flesh† |
| 3 | Canned, with tomato | 16·5 | 300† | 15‡ |
| 4 | Canned | 18·8 | 530† | 28‡ |
| 16 | Canadian, canned | *ca.* 7·0 | *ca.* 2,500 | 30 to 60‡ |
| 17 | Canada seal, canned with tomatoes | Not determined | | 15 to 30‡ |
| 8 | Fresh—Aug. (14 months stored) | 15·2 | <5,000 | <215 |
| 10 | Fresh—Sept. | 17·0 | 1,400 | 68 |
| 11 | " " | 15·5 | 1,100 | 48 |
| 12 | " " | 7·7 | 2,500 | 55 |
| 13 | " Dec. | 3·6 | 1,020 | 10 |
| 14 | " " | 7·7 | 1,280 | 28 |
| 15 | " March | 4·2 | 2,100 | 25 |

* For further details see Tables I and II.
† By calculation from other columns, except those marked ‡, which are results of direct determinations.

617 mμ, using the blue colour produced with antimony trichloride, and calculated from the formula

$$\text{I.U. per g.} = E^{1\%}_{1\text{ cm.}}\ 617\ \text{m}\mu \times 510.$$

Two purely qualitative tests in laboratory G on the oils from samples 4 and 8 gave results for absorption in the ultra-violet at 325 mμ consistent with those obtained by the more precise assays at laboratory L. When the samples of canned herring with tomatoes were examined a phase separation of lycopene had to be included to prevent interference with the antimony trichloride reaction of the vitamin A: apart from this the test, like the others, was carried out on the unsaponifiable matter of the oil previously separated by means of sodium sulphate and ether from the flesh. There may be some significance in the fact that the values for canned herring all fall at the lower end of the range for fresh herring; but the number of results obtained is not, in our opinion, sufficient to justify any definite conclusion about the effect of canning on vitamin A in herring flesh.

### Discussion and Conclusions

If the results obtained by us are genuinely representative of herring body oil, they tell a somewhat different story from what published figures might have suggested. A paper by Ranganathan (1941), though concerned mainly with Indian fish and shark-liver oils, gave a few figures for (presumably) body oils from sardine, mackerel, ray, and plough-fish: these range from 16,000 to 25,000 I.U. of vitamin D per 100 g.—round about the higher limit found by us for herring oil: no information is given about the oil contents of the fish or as to the presence or absence of liver and gut oil. A recent paper by Holmes *et al.* (1941) also gives some data for the body oils of eel, sardine, herring, menhaden, and rose-fish. Figures of 5,000 to 20,000 I.U. of vitamin D and 34,000 I.U. of vitamin A per 100 g. of oil are quoted, again without reference to the amount of oil in the whole fish. Further, Pugsley (1942) gives some figures for the Pacific species, *Clupea pallasii*, which is closely related to our own *Clupea harengus*. He found 7.3% of body oil in one sample of the fish, and the oil contained 3,300 I.U. of vitamin D per 100 g. (68 I.U. per oz. flesh), but no vitamin A. We ourselves are not, however, claiming to have made any exhaustive study of the factors affecting the fat-soluble vitamins in herring muscle, or to have encountered the whole normal range of values, so that the figures reported by other workers should be useful as a reminder that our conclusions apply only to herrings having vitamin contents that fall among the values found by us.

However, in calculating the contributions made by herrings to the daily human intake of vitamins, the figures given by these authors are of no very great assistance. In estimating the value of herring as sources of vitamins A and D, therefore, we have thought it best to rely on our own figures. Assuming that the average amounts of vitamins A and D per oz. of fresh herring are 40 and 250 I.U. respectively, that vitamins A and D are lower in the canned fish by the same proportion, so that the respective values per oz. are 8 and 50 I.U., and taking the average weekly consumption per head as 0.7 oz. of fresh herring and 1.2 oz. of canned, bloatered, or kippered herring—both slight overestimates; ignoring, furthermore, the high probability that smoking and curing involve greater losses of fat-soluble vitamins than does canning, we are able to estimate an outside value for the average individual daily intake of vitamins from these sources:

| | Units per oz. | | Units consumed per Day | |
|---|---|---|---|---|
| | Vitamin A | Vitamin D | Vitamin A | Vitamin D |
| Canned, etc. .. .. | 8 | 50 | 2 | 10 |
| Fresh .. .. .. | 40 | 250 | 4 | 25 |
| Total .. .. | | | 6 | 35 |

It is of course admitted that some individuals with a relatively high consumption of herring may obtain from them a useful proportion of their requirements of vitamin D, but this will only be at the expense of others who are deriving no appreciable amount from the same source.

Considered as an item in the national dietary, apart from such individual exceptions, it would appear, therefore, that the undoubted value of this fish as food must be due rather to its content of protein and of adventitious calcium from unavoidable herring bones than to its vitamin contents—at any rate, when consumed on what appears to be the usual scale in this country. It may be pertinent to add that available recent information as to the amount of vitamins A and D in salmon, canned or fresh, seems to indicate that the same considerations apply (cf. Pyke and Wright, 1941).

Such conclusions seem to us to be relevant not only to the problem of designing diets adequate for normal or optimal nutrition but also to the concept of adequacy itself, in so far as this is to any extent based on a study of actual dietaries, for which the nutrient analyses must generally, perforce, be taken from averaged published figures.

### Summary

The average amounts of vitamins A and D in fresh herring were of the order of 40 and 250 I.U. per oz., and in canned herring may be about 8 and 50 I.U. respectively. The average daily contribution made by herrings to individual human intakes of vitamins A and D in this country is insignificant—namely, about 6 and 35 I.U. respectively.

Some of the statistical data included in this paper were calculated by Dr. K. H. Coward, and Dr. J. O. Irwin assisted with advice on variance analysis. To both of these we are much indebted.

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# SICK ABSENCE AMONG MUNITION WORKERS

BY

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The medical profession has a vital contribution to make at the present time in the battle of production. In the fourth year of war, factory workers may begin to feel the strain unless working hours and conditions continue to be determined on scientific lines to ensure compatibility with optimum output. In this and allied matters medical opinion is indispensable. Moreover, it is of course important to minimize loss of working time due to manifest sickness, and for this reason continued research into the medical aspects of absenteeism is necessary. In this connexion the figures relating to a recent inquiry we have made may be of interest.

The inquiry covered seven engineering firms the managements of which agreed to supply information covering the period Nov., 1941, to April, 1942, in regard to the causes and extent of loss of working time on account of sickness. Special forms were supplied for the purpose, and our thanks are due to the firms and to the industrial medical officers concerned for their helpful co-operation. The firms were of all sizes, and thus represent a fair cross-section. The information collected has been analysed and is briefly set out in the tables.

### Comments on the Tables

The tables are more or less self-explanatory, but a few comments on them may be useful. The equivalent of 50% of all male employees lost some working time on account of sickness during the six months under review. The figure for females was 45%. In explaining the higher absentee figure for males, the age factor may have a bearing. The average age of male employees is probably greater because of the partial comb-out of younger men for the fighting Forces, whereas among females the young preponderate. It is conceivable that the increasing recruitment to industry of older married women, made possible by the large-scale wartime nursery provision, may tend in future to increase somewhat the percentage of sickness absenteeism among females. The greater physical demands generally made of males by the nature of their work is also a relevant factor, although this is set off to some extent by the greater liability of females to nervous disabilities connected with the repetitive work allotted to them.

As usual the "colds and influenza" group is shown to be the greatest single time-loser, and in both males and females nearly a quarter of all absentees are sufferers under this heading. A notable exception is provided by the females in Firm 7 (Table I). This firm is liberal in its provision of prophylactics against colds, and it appears that the women and girls avail themselves more readily than the men. At four of the other firms, however, vitamin concentrates are also made available. But the figures concerning absence due to colds and influenza at these firms are not particularly favourable, although it is agreed by each firm that the incidence of colds is lower among the employees regularly taking vitamin concentrate than among those not so doing.

Males are in a majority under the heading of respiratory affections, and females show the greater incidence of nervous conditions. There is a notable paucity of strictly occupational diseases. Accidents account for 6% of all absences in males and 5% in females. Certainly there appears to be no evidence that women are generally more "accident-prone" than men. The high accident figures in Firm 4 (Table I) are probably explained by the inclusion under the heading of accidents of comparatively small injuries which elsewhere have been categorized as "other conditions." Although comparative pre-war figures are not available it is clear that there is an increase in factory accidents, due to wartime pressure of work, the larger proportion of inexperienced persons at work, and like considerations. According to the figures, little time is being lost by workers on account of dental conditions. It is

TABLE I.—*Incidence of Sickness causing Absence from Work—Percentages of All Workers. (Figures relate to Seven Engineering Firms—Total Employees: M., 8,049; F., 3,397—during Period Nov., 1941, to April, 1942)*

| Nature of Disability causing Absence | Firm 1 | | Firm 2 | | Firm 3 | | Firm 4 | | Firm 5 | | Firm 6 | | Firm 7 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | M | F | M | F | M | F | M | F | M | F | M | F | M | F |
| 1. Colds and influenza | 11·4 | 10·7 | 9·9 | 14·3 | 10·0 | 5·4 | 8·3 | 10·4 | 23·4 | 66·7 | 11·1 | 17·4 | 13·4 | 3·4 |
| 2. Respiratory conditions | 8·9 | 3·5 | 8·4 | 6·2 | 3·3 | 1·8 | 13·0 | 18·8 | 8·1 | 8·3 | 7·5 | 6·8 | 8·5 | 2·7 |
| 3. Gastric affections | 7·5 | 3·4 | 5·1 | 2·6 | 3·6 | — | 6·5 | 8·8 | 3·4 | 20·4 | 4·6 | 2·1 | 3·8 | 1·2 |
| 4. Heart and circulatory conditions | 1·2 | 2·4 | 1·2 | 0·6 | 0·3 | — | 2·7 | 1·0 | 3·1 | 2·3 | 2·2 | 1·7 | 0·2 | 0·2 |
| 5. Nervous conditions | 2·2 | 5·8 | 1·2 | 2·3 | 0·9 | — | 2·0 | 4·7 | 0·9 | 6·8 | 1·9 | 7·6 | 3·5 | 3·6 |
| 6. Rheumatism | 5·0 | 5·0 | 3·5 | 3·6 | 3·3 | 5·4 | 2·0 | 3·1 | 5·0 | 4·5 | 1·0 | 0·8 | 2·0 | 0·4 |
| 7. Occupational dermatitis | — | — | 0·1 | — | — | — | 0·3 | — | — | 3·8 | — | — | 0·1 | — |
| 8. Other occupational diseases | — | — | 0·1 | 0·3 | — | — | — | — | — | — | — | — | — | — |
| 9. Skin conditions (excluding 7) | 1·0 | 1·3 | 2·9 | 2·6 | 0·6 | — | 2·9 | 1·0 | 0·3 | 0·8 | 0·5 | 3·0 | 1·0 | 0·3 |
| 10. Eye affections | 0·1 | 0·8 | 0·3 | 0·3 | 0·6 | — | 0·8 | — | 0·6 | 0·8 | — | 0·4 | 0·1 | — |
| 11. Ear, nose, and throat | 2·1 | 4·2 | 3·0 | 4·9 | 1·2 | — | 0·2 | 1·0 | 3·1 | 9·1 | 1·7 | 3·8 | 1·9 | 1·7 |
| 12. Infectious diseases | 0·8 | 0·6 | 0·7 | 2·9 | — | — | 1·0 | 0·5 | — | — | — | — | 0·1 | — |
| 13. Accidents | 3·6 | 1·5 | 3·4 | 1·9 | 3·0 | 1·8 | 14·4 | 22·9 | 0·9 | 3.0 | 5·5 | 0·4 | 0·3 | 0·2 |
| 14. Dental conditions | 0·1 | 0·8 | 0·4 | — | — | — | 0·7 | 0·5 | 0·6 | 5·3 | — | 0·8 | 0·5 | 0·1 |
| 15. Pregnancy | | 2·0 | | 1·0 | | — | | 3·1 | | — | | 0·4 | | 0·5 |
| 16. Other conditions | 4·4 | 7·2 | 6·5 | 5·9 | 3·9 | 1·8 | 3·5 | 9·4 | 7·5 | 20·4 | 5·8 | 8·0 | 19·1 | 7·6 |
| Totals | 48·3 | 49·2 | 46·7 | 49·4 | 30·7 | 16·2 | 58·3 | 85·2 | 56·9 | 152·2 | 41·8 | 53·2 | 54·5 | 21·9 |
| Total employees (average) | 1,556 | 1,297 | 1,856 | 307 | 331 | 56 | 602 | 192 | 321 | 132 | 416 | 236 | 2,967 | 1,177 |

TABLE II.—*Percentages of Sick Absence due to Various Forms of Disability (All Firms)*

| | Nature of Disability causing Absence. (See Key in Table I) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Males | 23·7 | 17·1 | 10·0 | 2·0 | 4·5 | 6·1 | 0·1 | 0·0 | 3·0 | 0·4 | 4·0 | 0·8 | 6·2 | 0·8 | — | 21·3 |
| Females | 24·0 | 10·4 | 7·4 | 2·9 | 10·4 | 6·3 | 0·3 | 0·1 | 2·5 | 0·9 | 7·4 | 1·1 | 5·1 | 1·3 | 2·5 | 17·4 |

TABLE III.—*Percentages of Workers Absent Sick (All Causes) Month by Month (All Firms)*

| | Nov. | Dec. | Jan. | Feb. | March | April |
|---|---|---|---|---|---|---|
| Males | 8·2 | 7·1 | 9·1 | 8·5 | 8·5 | 8·7 |
| Females | 7·5 | 6·4 | 8·0 | 6·8 | 7·5 | 8·6 |

TABLE IV.—*Average Numbers of Working Hours Lost per Absentee (All Firms) in Respect of Each Disability Group*

| | Nature of Disability causing Absence. (See Key in Table I) | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| Males | 65·8 | 106·9 | 82·1 | 148·8 | 102·5 | 100·4 | 113·2 | 10·0 | 100·0 | 65·6 | 75·6 | 142·3 | 95·0 | 126·4 | — | 98·0 |
| Females | 66·3 | 112·0 | 69·1 | 106·8 | 110·2 | 82·0 | 240·0 | 250·0 | 72·8 | 77·5 | 78·5 | 131·3 | 75·0 | 83·3 | 193·2 | 104·2 |

likely that in many cases lengthy dental work is being neglected under the pressure of essential war work. It will be noted that "other conditions" constitute a considerable proportion of the causes of absence. This is due in part to the vague nature of some of the medical certificates received at the factories in respect of absentees.

### Conclusion

In connexion with the health of factory workers, home circumstances play at least as big a part as working conditions, and it is ordinary sickness that is the chief time-loser. The problem thus overflows from the field of industrial medicine into the spheres of public health and general practice. The inquiry here reported brings out the need for improved and standardized sickness records relating to factories, and underlines the importance of explicit certification by medical practitioners. In preventive medicine, all possible measures against the winter incidence of colds and influenza in the factories are a first requisite. A consideration of factory working hours is inseparable from the problem of sick absence. The health of munition workers, as of the general population, is on the whole being well maintained.

## SUDDEN DEATH IN UNSUSPECTED RHEUMATIC CARDITIS

BY

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Sudden death in unsuspected rheumatic carditis is a rare event, and very few cases have been reported (Géraudel *et al.*, 1928; Thatcher, 1929; Breitenecker, 1931; Laplace, 1939; Lisa, 1939; McNamara, 1941). The following is the record of a case occurring in an apparently healthy infant.

### Case History

An only child aged 2 years 8 months was apparently in excellent health, playing with his toys, when he suddenly cried out in distress and ran a short distance to his mother in an adjoining room. He continued to cry loudly for a few minutes, and then became faint. Death occurred within half an hour.

*Necropsy.*—The gross pathological findings were confined to the heart and right lung. Two infarcts were seen in the lung—one near the apex, and the other, slightly smaller, on the lateral surface of the lower lobe. The base of the larger infarct measured 1½ in. in diameter, and the cut surface in each case showed a characteristic triangular outline and a sharp demarcation from the surrounding lung, in which there was no evidence of consolidation. Unfortunately, a careful dissection, with demonstration of the emboli, was not attempted. Examination of the heart showed a general enlargement to 120 g. (normal 55 to 75 g.), as well as rheumatic mitral and tricuspid valvulitis. The vegetations on the mitral cusps were characteristically bead-like, firm, and pale, in contrast to those on the tricuspid, which were soft and pink, and evidently of a more recent origin. There was no evidence of pericarditis, and the cut surface of the myocardium did not appear unusual.

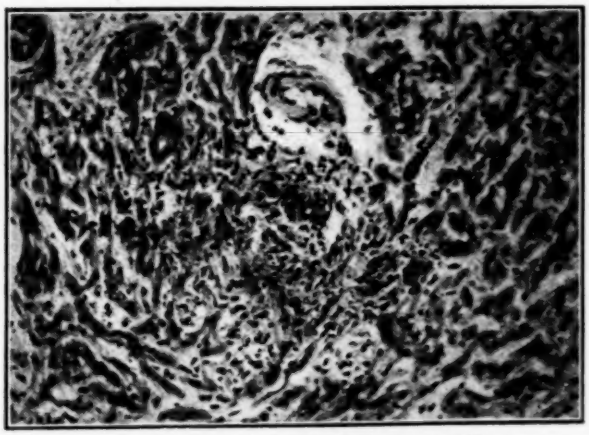

FIG. 1.—Typical Aschoff body in myocardium.

*Histology.*—The histological changes were focal in distribution, and several areas of myocardium showed no recognizable variation from normal. A few characteristic Aschoff bodies (Aschoff, 1904) were seen in the interstitial tissue (Fig. 1), and in some sections there was a diffuse infiltration by lymphocytes and polymorphonuclears between the muscle fibres. Some fibres in these areas were swollen and fragmented, with large irregular hyperchromatic nuclei, giving the impression of a rather acute degenerative process (Fig. 2). Bacteria were not seen in any of the sections examined.

FIG. 2.—Myocardial fibres disintegrating.

### Commentary

Severe fulminating carditis is becoming very rare in children (Miller, 1937), although subclinical rheumatism is common. The heart itself, when acutely invaded by the rheumatic process, only rarely gives rise to symptoms (White, 1937), and in this case it is probable that the urgent symptoms preceding death were due to the pulmonary infarctions.

The aetiology of lung infarction in general has been exhaustively studied (Belt, 1939), and embolic manifestations in rheumatic heart disease have also been investigated (Weiss and Davis, 1933). In a group of 174 cases of rheumatic heart disease infarction of one or more organs occurred in 45%, the lung being the organ most often affected, and in 21% of the series embolism played a chief or contributory part in the death of the patient.

An interesting feature of this case is the possible relation between the only previous illness and the fatal termination. The appearance of the heart at necropsy, as well as the histological findings, indicates that the disease had existed for some time before death, and it is possible that the attack of bronchitis from which the child had suffered six months previously may have been the initial manifestation of invasion by the rheumatic process.

The relation between upper respiratory infection and rheumatic fever has been studied by several workers (Wilson, 1940), and it appears that in some cases a severe cold or bronchial catarrh may usher in or precede by a variable interval the development of clinical rheumatism. The opinion of most workers in this field, however, is that respiratory infections are not a specific provocative agent in the occurrence of rheumatic fever (Hench, 1938).

In the histological examination the finding of characteristic Aschoff bodies was accepted as proof of the rheumatic nature of the infection, and the other components of the microscopical picture provided additional evidence in support of this conclusion.

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# Medical Memoranda

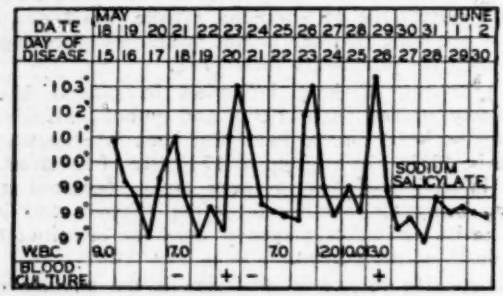
## Meningococcal Septicaemia with a Malarial Type of Fever

A case with a regular and intermittent type of fever suggestive of malaria, but which proved to be meningococcal in origin, has recently been observed by me. The case resembles one reported in the *Journal* (Aug. 1, 1942, p. 129) by Dr. R. Priest.

### CASE REPORT

A 23-year-old soldier was admitted to hospital on May 18, 1942, complaining of soreness in the back. Two weeks previously he had had a fairly sudden onset of chilly sensations, followed by the appearance of tender red lumps, 1 to 2 cm. in diameter, on his shins, thighs, and elbow regions. A few days later symmetrical swellings developed below both knee-caps, and both knee-joints were painful. These lesions gradually subsided in a week. Three days before admission he developed a dull low-back pain.

On admission the patient's oral temperature was 101° F., and he appeared ill. The positive physical findings consisted of a few faint brownish non-tender blotches over both thighs and shins, point tenderness over the second lumbar vertebra, and enlarged tender inguinal lymph nodes. Urine and prostatic smears were essentially negative. The haemoglobin was 14.85 g. per 100 c.cm., and the total leucocyte count 9,000 per c.mm., with 75% polymorphonuclears. Over the first 12 hospital days there was a fairly abrupt temperature rise every two or three days, the peaks varying between 101° and 103° F. and falling rapidly. The elevations were accompanied by pulse rates of 70 to 80. A smear for malarial parasites was negative. Blood cultures, taken on four occasions, were twice positive for *N. meningitidis*, Group 2. The positive cultures were obtained just before the peak of a temperature elevation, the negative cultures at a time when the temperature was falling. Leucocyte counts made during pyrexial periods ranged from 12,000 to 17,000 and in the afebrile periods from 7,000 to 10,000 per c.mm.




The respirations remained normal, except that a rise occurred during one febrile episode. Sedimentation rates, taken over the first 17 hospital days, were nearly constant at 34 to 36 mm./hr. (Wintrobe). Nasopharyngeal cultures were negative for *N. meningitidis*.

Two tender red lumps developed on the inner aspect of the patient's right arm on the 7th day in hospital. These persisted 4 days. He complained of considerable stiffness in the knees and hips. Positive blood cultures were taken on May 23 and 29; but the first blood took 7 days and the second 4 days of incubation before *N. meningitidis*, Group 2, was definitely isolated. While awaiting a laboratory report on these cultures rheumatic fever was considered. The patient was given 4 to 5 g. of sodium salicylate daily for 5 days, beginning on the 13th hospital day. He thereafter was symptom-free and his temperature remained normal. Cultures of blood and sternal bone marrow taken on the 22nd hospital day were negative. However, beginning on the 23rd hospital day, the patient was given a total of 48.5 g. of sulphadiazine over a week's period, to lessen the chance of any relapse. Nuchal rigidity and splenomegaly were absent throughout the course of the disease.

Although meningococcaemia was early suspected in this case, repeated blood cultures and a prolonged incubation of them were required to establish the diagnosis. Before the aetiology of the disease was definite, malaria was considered owing to the regularity of the pyrexia, and rheumatic fever in view of the joint manifestations. Gonococci were sought for in association with the arthritic symptoms.

This case illustrates the bizarre picture which may be presented in meningococcal septicaemia. The malarial type of periodicity, together with the erythema nodosum lesions, makes it likely that both the present case and that reported by Priest had the same diagnosis, although no positive blood cultures were obtained in the latter.

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# Reviews

## PARASITOLOGY

*Textbook of Clinical Parasitology: Including Laboratory Identification and Technic.* By David L. Belding, M.D. (45s.) New York and London: D. Appleton-Century Company. 1942.

This book will make an instant appeal to all those who are interested in medical zoology—protozoology, helminthology, and entomology—whether from the point of view of the student of parasitology, the pathologist working in a laboratory where clinical material comes for examination, or the clinician who is occupied with the diagnosis and treatment of cases of infection. Within its 888 pages will be found adequate information regarding the structure and life history of the various animal parasites which assail man and the arthropod vectors responsible for the transmission of many of them. The subject-matter is clearly set forth, a notable feature being a series of tables giving at a glance the distribution of the parasites, their localization in the body, the symptoms produced by them, the method of their transmission, the remedies to be employed for their eradication, and other information.

The book is profusely illustrated with drawings which are admittedly schematic but which depict the essential features of each parasite or arthropod described, and by their excellence render identification much simpler than it otherwise would be. There are four coloured plates of intestinal protozoal cysts stained by iodine and of malarial and other blood parasites coloured by Leishman stain.

After an introduction (70 pages) dealing with such subjects as nomenclature, evolution of animal parasites, hosts of parasites, pathological changes brought about by infection, immunity, serological methods of diagnosis, treatment of parasitic diseases, and other general matters, a series of chapters (151 pages) describe the protozoa which may give rise to human infections. There then follow 21 chapters (366 pages) on the helminthic parasites and 14 chapters (180 pages) on entomology. These chapters are distributed among a series of six sections, and a final section deals with technical methods for the diagnosis of parasitic infections and the chief drugs employed in their treatment. References to relevant literature are given throughout the book, while a good index enables any desired subject to be quickly turned up.

The book is comprehensive and reliable. It is unquestionably a good one, and will prove to be of the greatest use to students of parasitology and an invaluable book of reference in laboratories which have to deal with the animal parasites of man and the pathological conditions they produce. We can thoroughly recommend it to students of tropical medicine and medical men and laboratory workers in this and other countries.

## INTESTINAL OBSTRUCTION

*Intestinal Obstructions. A Physiological and Clinical Consideration with Emphasis on Therapy, Including Description of Operative Procedures.* By Owen H. Wangensteen, M.D. Second edition. (Pp. 484; illustrated. $7.00 post paid, or 38s. 6d.) Springfield and Baltimore: Charles C. Thomas; London: Baillière, Tindall and Cox. 1942.

Treves once wrote, "Those who are enamoured of statistics could, I have little doubt, show that it is less dangerous to leap from the Clifton Suspension Bridge, than to suffer from acute intestinal obstruction and decline operation." If this statement requires some modification to-day it is largely because of the present practice of intestinal decompression by suction following duodenal intubation. It is no longer true to say that high intestinal obstructions are more dangerous than low. The replacement of fluid and electrolyte loss, and duodenal tube drainage, have altered all that. In the introduction and development of duodenal suction drainage the author of this book has played a large part, for it was in 1931 that he first practised the procedure in the case of a patient aged 72 who had been obstructed for three days. Among much valuable experimental work relating to intestinal obstruction which Dr. Wangensteen has carried out since must be included his demonstration of the value of suction over mere siphonage. Adhesive obstructions are to-day especially amenable to treatment by conservative decompression, which in many cases brings about an automatic re-establishment of intestinal continuity; but Dr. Wangensteen insists that if a patient with

mechanical obstruction is thus treated conservatively the progress of the decompression must be followed by *x*-ray films, because clinical data alone are insufficient evidence. With the advent of duodenal suction also the dread prospect of post-operative acute gastric dilatation ceases to disturb the surgeon. For this and many other benefits which duodenal suction has conferred we are grateful to the author of this monograph. We are further grateful for his production of the book itself, and now particularly of the second edition. It is in many respects a new book as compared with the original work, which consisted of the published winning essay for the Samuel D. Gross Prize of the Philadelphia Academy of Surgery for 1935. The Miller-Abbott tube, which appeared after the issue of the first edition, is adequately dealt with in the present edition, which contains much new matter.

This is probably the most complete treatise on the subject of intestinal obstruction that has yet appeared. Some idea of its scope may be gathered from the fact that it is arranged in four sections, the first being devoted to physiological and clinical aspects, the second dealing with diagnosis, the third with treatment and management of cases, and the last part with a consideration of the special obstructions such as congenital and obturator lesions, adhesions, tumours, herniae, intussusception, and obstructions due to vascular causes. Authors and subjects are indexed separately; illustrations and printing are good. We predict that the work will become a classic.

## INDUSTRIAL HEALTH

*Health Services in Industry.* (Pp. 60. 2s. 6d.) Industrial Welfare Society, 14, Hobart Place, London, S.W.1.

The Industrial Welfare Society, which exists primarily as an information and propaganda medium for employers, has published an interesting booklet on health services in industry. The contents include reasons for the need for this service and how to set it up, staff and accommodation required, the position and duties of the medical officer and his relation with outside health services, records, ancillary services such as dental and ophthalmic, and a short final chapter on general health and working conditions.

While this booklet contains much useful information for the employer who is interested in the problem, there are certain statements which need comment. Stress is laid, for example, on the importance of rest rooms in factory medical departments. In our view they lead to abuse just because they are called rest rooms; rest is obviously part of treatment, but why not call it treatment? The suggested layouts for health service departments given in an appendix are hardly up to modern standards. The importance of medical examination of new entrants to industry is emphasized and taken for granted rather than considered critically on its merits in relation to labour turnover and present-day conditions of employment. Except for specific occupations, many hours can be wasted in wartime in carrying out such examinations as a routine, not only because of the labour position generally but also because of the lack of physical standards and the large margin of error in one medical opinion. The use of foot baths for shock will be a form of treatment new to many surgeons. The important fact, in relation to the prevention of sepsis, that exemption from the duty to provide first-aid boxes can be obtained from the factory inspectorate in factories with approved ambulance rooms is not mentioned. Beyond the need for light work and rehabilitation facilities for fracture cases there might have been some mention of the even greater need for organized treatment and rehabilitation services for other types of injury, which in factories outnumber fractures by 10 to 1. In connexion with sickness absenteeism we would have liked to see some practical suggestions on how the factory doctor could apply statistics in an attempt to reduce its incidence—for example, what should be his approach to the problem where he finds a high rate in a certain department or occupational group?

On the whole, however, the booklet contains much interesting information and should be read by all industrial medical officers. It is gratifying to know that the Industrial Welfare Society is still pressing actively for an extension of medical supervision in industry; its pioneer work in this direction is well known and must be fully acknowledged by the medical profession.

## Notes on Books

*Minor Surgery, by* Dr. CHARLES M. OMAN, is another member of the Oxford Medical Outline Series (12s. 6d. each) and consists of pages of headings and rather terse comments interleaved with blanks, presumably for the student's remarks. The author tells us that it must not be forgotten that all minor surgery is potentially major surgery, and the inclusion in this book of such conditions as gas gangrene, acute osteomyelitis, abdominal injury, and compound fractures gives ample ground for his remark. As an example of the "make-up" we may quote from a comment on tourniquets (p. 145): "B. General consideration as to their use: 1. Frequently they are less necessary than is imagined." Most of us would agree with that. This little book covers the subject well and should be of service to students, provided they remember, as its author points out, that it has no pretence to being a textbook but is merely a practical working guide. Its chief use will obviously be in the casualty and out-patient departments and wards, and full use should be made of the blank sheets for amplification and notes of cases.

The seventh edition of the popular textbook *Diseases of Women*, by Ten Teachers (Edward Arnold; 18s.), is a good one and, like its companion volume on midwifery, it has been completely revised. With the advent of specific chemotherapy it has been found necessary to rewrite those sections dealing with pelvic inflammation. General principles more than details of treatment are discussed throughout the book. The student is thus given a concise guide to his studies rather than an exhaustive textbook of reference.

The great popularity among students of Dr. R. W. FAIRBROTHER'S *Text-book of Bacteriology* (William Heinemann; 17s. 6d.) is shown by the publication of a fourth edition only five years after its original appearance: each of the earlier editions also had to be reprinted. The principal change made is the addition of a new chapter on chemotherapy.

The late Mrs. J. LANGTON HEWER'S popular handbook *Our Baby for Mothers and Nurses* has now reached a 22nd edition and 213th thousand since its first appearance half a century ago. The text has been revised from the medical point of view by Dr. Margaret Scott-Brown, who has made it her aim to leave Mrs. Hewer's fundamental teaching unaltered. The publishers are John Wright and Sons, Ltd., and the price is 5s.

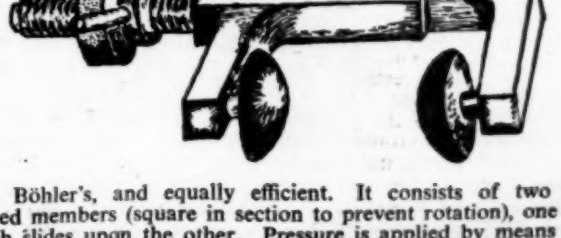
A pamphlet that will be useful to many general practitioners is *War-time Information for Pharmacists* compiled by the *Pharmaceutical Journal* and published by the Pharmaceutical Press (17, Bloomsbury Square, W.C.1) at 1s. The contents are arranged in the alphabetical order of their headings and there is a convenient list of addresses at the end.

# Preparations and Appliances

## A SIMPLE FRACTURE REDRESSOR

Major G. A. G. Mitchell, R.A.M.C., O.C. No. 1 Orthopaedic Centre, M.E.F., writes:

Crush fractures of the tibial head and os calcis are common results of land and sea mine explosions and of aeroplane and parachute accidents. Manual reduction of these injuries is often difficult, and then a redressor is valuable. The instrument illustrated in the line drawing (1/4 scale) is simpler in design



than Böhler's, and equally efficient. It consists of two L-shaped members (square in section to prevent rotation), one of which slides upon the other. Pressure is applied by means of the screw arrangement shown at one end. Two different shapes and sizes of metal pressure pads are provided, one set suitable for the os calcis and the other for the tibial head; they are supported on short columns with screw ends, so that they are easily interchangeable. The original instrument was made for me in an R.A.O.C. workshop.

# THE STUDY OF NUTRITION IN LATIN AMERICA

BY

**PEDRO ALBERTO ESCUDERO, M.D.**

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(ABRIDGED)

The National Institute of Nutrition at Buenos Aires has come about as a gradual development over a period of ten years. In 1921 Prof. P. Escudero,* professor of clinical medicine at the National University, started a scientific movement for the study of nutrition. Three years later he suggested to the Director of Public Assistance the desirability of a survey of nutritional diseases, to be carried out at the Rawson Hospital. The services so created were the origin of the Municipal Institute of Nutrition in 1928, at which systematized studies were undertaken. Here the first dietetic kitchen in Argentina was established. A survey of nutrition was made at the municipal hospitals in 1931 under the guidance of Prof. Escudero, and its results were summarized in a report to the fourth National Congress of Medicine in Argentina.

A School of Dietitians was started in 1935; and in 1938, by a decree of the then President, General Justo, the National Institute of Nutrition was founded. This included the School of Dietitians and also a residential college for students from the provinces and territories, whereby the benefits of the foundation were extended to the interior of the country. To enter the Institute the candidate must show the same standard of secondary education as is required for entrance to the Medical Faculty. Almost every province and national territory now has graduates from the Institute. In 1939 scholarships were instituted to promote the study of dietetics as a medical specialty, and during the present year doctors from four provinces have graduated. In the course of the next decade or two it is expected that a considerable number of medical specialists in nutrition will be practising in the country.

The third International Conference on Nutrition under the auspices of the League of Nations—the first to be held outside Geneva—assembled at Buenos Aires in 1939, and its conclusions were so startling that in October of that year the late President of the Republic, Dr. Ortiz, opened the doors of the Institute to all Latin-American countries, with a grant of scholarships for dietitians and dietetic specialists. Fellows from six South American countries apart from Argentina itself have now graduated from or are students at the Institute. Thus the Institute has become a Latin-American university centre for the study of nutrition. It has a staff of over 300, and its present provisional budget is for 1,200,000 pesos (about £70,000). An Act conferring full autonomy on the Institute and providing for its resources is expected shortly to be passed by the Argentine Senate.

### Aims of the Institute of Nutrition

Prof. Escudero has given the following definition of the work of his Institute: "The basis for the conservation of the human being is nutrition; life, strength, reproduction, mental energy, and social and moral progress are dependent upon it. The Institute of Nutrition includes the study both of the life of the individual as a physical and moral entity and of the society of which he forms a part. The Institute is not merely a hospital, although it treats patients; not merely a laboratory, although it examines biological processes; not merely a centre for social studies, although it investigates sociological phenomena; not merely an office for social welfare, although it helps those in need; nor is it merely a school or a pulpit, although it teaches and preaches. It is all these things, with investigation of facts, causes, and remedies as its central aim." In other words, it is a centre for social, economic, and hygienic survey. It co-ordinates all these branches of activity with a view to maintaining and improving the physical and moral health of the individual, the family, and the community. In studying the patient and the causes of disease it has always the prophylactic aim in view.

In many quarters there exists a narrow and therefore mistaken notion of what is understood by nutrition. The Director of the Institute divides nutrition into three stages: (1) alimentation, or intake of matter and energy, beginning from the time the food is chosen; (2) metabolism, or exchange of matter and of energy, beginning from the moment of absorption of the alimentary substance; (3) excretion, or the elimination of the used or unusable. Nutrition, he says, is not a single function, but the result of correctly harmonized functions which complement one another, and the aim is to maintain the normal integrity of living matter and to ensure life. Too often nutrition is considered only as metabolism. Prof. Escudero has similarly enlarged the notion of nutritional disease, which to most authors is a synonym for metabolic disorder. He divides all nutritional diseases into three main groups: alimentary, metabolic, and excretory.

Some special forms of study and of approach to the subject have been adopted at the Institute. One of these is "alimentary anamnesis"—to assist in the judgment of the existing alimentation and to furnish information of the effect of past and present dietary habits on the disease or the state of the patient. A formulary has been worked out for the examination and comparison of different dietaries so that adjustments can be made and prescriptions given for the food required and the way it should be prepared and consumed. By these various methods and formularies it is possible to prescribe, examine, and compare the diets advised.

### Character of the Studies

In its studies the Institute works in six divisions, co-ordinated by a general direction. These divisions are: education, social work, alimentation, research, educational work, and medical assistance. The general direction undertakes the administrative and technical control of the Institute, which has a general and a technical secretary. The problems which come before the general direction can be divided into three—health, economic, and social—always, of course, related to nutrition. For the solution of such problems a technical council or board is formed by the heads of the divisions, with the general director as chairman.

The educational division is concerned with the training of technicians in food and alimentation. The teaching of this discipline is officially assigned to the Institute by the Faculty of Medicine of the University, and there is perfect understanding between the two bodies, as the General Director of the Institute is also Professor of Nutrition. Training is given in the Nutrition Clinic for undergraduates of the School of Medicine in their final year (the seventh), also finishing courses for graduates who are to become dietitians, a title awarded by the Faculty. By decree of the National Executive Board all official technical posts related to food and alimentation must be preferentially filled by those who have followed these courses. The students are first instructed in the alimentation of the normal individual and the community and afterwards in the alimentation of sick persons.

The training of dietitians is of a university type, claimed to be far superior to the similar disciplines at other American and at European schools. The plan of studies is divided into two cycles. The first includes normal alimentation from the biological and economic points of view for the individual at different ages and for the community; the second considers alimentation in sickness. Two scholastic years are occupied with the first—or normal—studies, and the third with alimentation in disease. For admission to this training a college course degree is required, such as Bachelorship of Arts or Commerce. The occupation of dietitian (non-medical) is reserved to women.

The School also trains auxiliaries and nurses specializing in food problems; the studies undertaken in these cases are more restricted. The medical dietetic specialist, the dietitian, and their co-workers—the auxiliary and the nurse—form a unit ready to solve any nutritional problems. As already stated, the School has a residential quarter where students from the provinces or from other Latin-American countries may be boarded during their training.

* Father of the author.

### Sociological Studies

The division of the Institute which deals with social work is subdivided into research, prevention, and social assistance sections. The research section has two branches, one of which is concerned with the social and economic condition of the families investigated, making inquiries regarding income, food consumption, and health conditions; the other branch is concerned with the moral condition of families through a survey of social behaviour and mental health.

The section dealing with prevention is entrusted with the care and protection of normal individuals. It has nothing in common with the so-called health centres in other countries. Its work is carried out by means of clinics or consultations at which advice is given on matters of health, food, and the influence of work and home in relation to the age and condition of the individual. Periodical examinations are made, patients being given appointments at the day and hour most suitable to them. Food is studied from the hygienic and economic points of view, and advice is given regarding the best kinds of food to choose, bearing in mind the family budget and the individual requirements. Eugenics, care and protection of pregnant women and nursing mothers, care of children, popular education on food questions, and social records, all come within the scope of this section.

In the section of social assistance various moral problems and problems of behaviour concerning the individual and the family come forward for consideration. Occupation is provided for the workless, and material help, mainly in the form of food, is also provided. In this connexion the Institute endeavours to preserve family life. It does not rely on popular restaurants or canteens, which disturb the normal family relations. The meal-time is the occasion for the gathering of the family, the time when the existence of the family as a unit is best manifested. The provision of canteens is accepted as a necessary accompaniment of industrial or business life, but it is not regarded as anything like the ideal approach to the nutritional problem. A more discriminating assistance is ought to be given, requiring knowledge of the family and its means, and calling for the teaching of cooking and the best means of utilizing food, and in necessitous cases the giving of foodstuffs.

Help is still more generous in the case of pregnant or nursing women and mothers of small children. A lactarium for the free provision of mothers' milk, regardless of the family budget, for the first month of the infant's life, has been set up, and so far has proved extremely successful. The extra milk is purchased from the donor mothers, and both their babies and those of the receiving mothers are supervised.

### Alimentation, Research, and Propaganda

The alimentation division of the Institute includes various technical studies, and maintains and controls free refectories for sick people and school canteens; dietetic restaurants, too, are shortly to be provided for sick persons who can afford to pay. The work of the division is undertaken by a number of medical dietetic specialists, lay dietitians, auxiliaries, and nurses. The research division includes various chemical and biological laboratories; laboratories of alimentary technology and an experimental farm are projected.

In the sphere of propaganda one division undertakes the service of the Press and wireless to popularize basic knowledge about nutrition. Lectures are given to teachers and to housewives on kitchen cookery and on the best utilization of the food they purchase, with brief explanations of the hygiene of alimentation. These lectures and courses are given by women dietitians who are well acquainted with this kind of social and educational work.

Finally, a sixth division undertakes medical assistance in nutritional diseases. It is estimated that 80% of such chronic patients do not require complete institutional treatment. They can be assisted as out-patients by means of a refectory, receiving, in fact, everything that they would have received in an institution except the bed. The patient sleeps at home, carries on his work, and has his meals at the Institute. The acute cases or cases in the acute stage of a chronic condition are received at a residence having 60 beds, to which also are admitted cases requiring special study. Usually the patients who need a special diet and have their meals at the refectory are suffering from diseases of metabolism and imbalance, diseases of the digestive tract and its glands, of the urinary and renal system, and of the skin. The assistance given is supplemented by the service of consultants in dermatology, gynaecology, urinary diseases, and otology and laryngology. Physiotherapy and massage are administered. There are also a small surgical service, a radiological department, and pathological laboratories.

The service given to in-patients and out-patients extends to all ages and both sexes, and is organized on the lines of a general hospital. Between 6,500 and 7,000 patients are treated every year.

### Future Work of the Institute

It should be borne in mind, however, that the Institute is principally a centre of investigation and teaching. The direct assistance given to patients is only of limited extent; the aim of the Institute is to ascertain the best form of assistance, not to fulfil it as a routine. The same is true of the social assistance which it affords. It avoids mere extension due to the multiplication of the routine of its services; it looks for the cause of the phenomena studied and endeavours to find the remedy or the means of avoiding them.

Its social and educational work is equally important. Until 1921 studies on nutrition were regarded with indifference by the scientific world of Argentina. Until 1930 the Government, the Legislature, and the people were generally ignorant of alimentary problems, although the main source of the revenue of the country is food production. But the question of popular alimentation has awakened a legislative, social, and economic movement, the more marked since the third International Conference on Nutrition under the auspices of the League of Nations was held at Buenos Aires in 1939.

Over a period of eighteen months—from June, 1936, to November, 1937—the Institute conducted a survey of health conditions in Buenos Aires in relation to the family budget. The expenditure on food and the minimum budget required to live modestly but decently and to be correctly fed were estimated. A similar survey has just been completed at the industrial town of Avellaneda, a suburb of Buenos Aires, and another is being carried out at the town of Mendoza. Prof. Escudero resigned his professorship of clinical medicine, which he had held since 1921, to become professor of nutrition when the Faculty of Medicine included a clinic of nutrition in its plan of studies.

The work already done in the training of medical dietologists, dietitians—a new profession which may be said to have been created by the Institute—and their auxiliaries is expected to have further developments in the Argentine Republic. Already the province of Mendoza in Western Argentina has set up a department of nutrition as a branch of its health direction, involving a certain modification of its hospitals and an economic-social survey of its population. The Institute has also started to draw up an "alimentary geography" of the country, including a study of alimentary folklore and of present food production. By the time the work of the Institute reaches its full development it is hoped that health conditions in Argentina will have manifested very great improvement owing to a recognition of what the founder of the Institute has called the "non-specific prophylaxis" of diseases whose onset is due to simple maladjustments in living rather than to any specific cause.

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H. P. Fernandez (*Tubercle*, 1942, **23**, 50) records six cases in patients aged from 20 to 39 who developed symptoms of distress after aspiration. The onset of these symptoms was attended by a fall in blood pressure, associated with high negative intrapleural pressures, mediastinal displacement, and lung re-expansion. In all cases relief of distress followed injection of adrenaline and pituitrin. The relief was accompanied by a rise in blood pressure and occurred at a time when mediastinal displacement, lung re-expansion, and high negative intrapleural pressure had not been adjusted. Fernandez comes to the following conclusions: (1) The symptoms of distress after aspiration were due to a high negative intrapleural pressure; lung re-expansion produced by this led to a circulatory disturbance, causing a fall in blood pressure. (2) Injection of adrenaline is of value as an emergency measure for such distress.

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## THE BEVERIDGE PLAN

The publication on December 2 of Sir William Beveridge's Report on Social Insurance and Allied Services had not been unheralded in the Press, and many intelligent anticipations reached the public eye before the large printed document was released. The report has been widely summarized and commented upon in newspapers and reviews during the past ten days, and medical men and women must already be familiar with its broad outlines. Sir William Beveridge alone signs the report, though he acted as chairman of an interdepartmental committee set up to survey the whole field of existing national schemes of social insurance and allied services, including workmen's compensation. For the views and recommendations on questions of policy which the report contains Sir William, by the Government's wish, takes sole responsibility. His plan for post-war social security aims to replace the present medley of social services by a single comprehensive system, bringing the adult population of the country into a compulsory, and in the main contributory, unified scheme of insurance to provide against sickness and unemployment and old age, and for family allowances. It is meant to include all citizens, without upper income limit, and to be administered by a new Ministry of National Security, to which would be transferred the relative responsibilities of six or more Government Departments as well as some of the duties of local authorities. One stamp on one insurance document, payable weekly, would cover all social insurance schemes.

Briefly put, the report proposes that medical treatment should be separated from the administration of cash benefits and that a comprehensive medical service should be set up for everyone, covering all treatment and every form of disability, under the supervision of the Health Departments. The paragraphs which are of primary interest to the medical profession and those associated with it have so far had little attention in the newspapers, and for that reason we print them in full at p. 704. Sir William Beveridge accepts the view that restoration of a sick person to health is a duty of the State and of the sick person, prior to any other consideration; and he adopts the definition of the objects of medical service in the draft interim report of the Medical Planning Commission of the B.M.A. —"(*a*) To provide a system of medical service directed towards the achievement of positive health, of the prevention of disease, and the relief of sickness; (*b*) to render available to every individual all necessary medical services, both general and specialized, and both domiciliary and institutional." But he says that most of the problems of organization of such a service fall outside the scope of his report. This excludes any opinion by him on such questions as free choice of doctor, group or individual practice, or the place of voluntary and public hospitals respectively in a national scheme. "Once it is accepted that the administration of medical practice shall be lifted out of social insurance to become part of a comprehensive health service, the questions that remain for answer in this report are in the main financial." It will be seen that in handling these financial questions, after dismissing organization as no affair of his, he takes up in separate paragraphs domiciliary treatment, institutional treatment, special services like dental and ophthalmic treatment, subsidiary services such as supply of medical or surgical appliances, nursing and convalescent homes, and post-medical rehabilitation.

The problems involved in establishing and running a comprehensive medical service for all, and even the financial basis of such a service, are excluded from the Beveridge Report. Its author merely suggests the need for a further immediate investigation in which the finance and the organization of medical services could be considered together, in consultation with the professions concerned and with the public and voluntary organizations which have established hospitals and other institutions. The ideal plan, in his view, is a health service providing full preventive and curative treatment of every kind for every citizen without exceptions, without income limit, and without an economic barrier at any point to delay recourse to it—in other words, a 100% service for 100% of the population. His cool words about the effect of all this on private medical practice will arouse mixed feelings: "The possible scope of private general practice will be so restricted that it may not appear worth while to preserve it." Further immediate investigation is certainly called for, and it will have to be very thorough. The primary interest of the proposed Ministry of National Security may not be in the details of the national health service or in its financial arrangements; but such details and arrangements must be worked out with the full consent of those who provide the service if the great social plan of which they will form part is to fulfil its author's great expectations.

## PREVENTION AND TREATMENT OF HEPATITIS

A rise in the jaundice rate seems to be an inevitable concomitant of war, and this war has been no exception to the rule. Epidemics of infective hepatitis have been reported by the enemy and have occurred among our own troops. The increase in the incidence of syphilis and in the vigour of arsenical treatment has its corollary in the increase of toxic jaundice. Our American allies have had the unfortunate experience of a high incidence of jaundice after vaccination against yellow fever, now happily arrested by improvements in the vaccine. On a very much smaller scale there has been the usual outbreak of T.N.T. jaundice which follows the entry of an unsalted population into the filling factories. Most cases of non-obstructive jaundice clear up rapidly, but when the jaundice lingers or recurs the physician's anxiety deepens, for experience shows that fibrosis or insufficiency of the liver is inevitable if the disease process is not arrested. We may well ask ourselves why inflammation or degeneration persists when the initial noxa has presumably disappeared. Cullinan[1] found final degeneration of the regenerated liver tissue in all but two of his cases of recurrent jaundice, and in some there was evidence of at least three attacks of necrosis. Is there a vicious circle, comparable with that in Bright's disease, so that the metabolism now perpetuates some harmful product or process? Our thoughts turn to a diet which will spare the damaged liver, in the same way that undernutrition will arrest the progress of diabetes. When we consult textbooks on treatment we are advised that the diet should be chiefly carbohydrate in composition as throwing least strain on the damaged organ. "Protein should be kept down to the minimum bodily requirement as the metabolism of their derivatives requires hepat

[1] *St. Bart's Hosp. Rep.*, 1936, **69**, 55
[2] *Quart. J. Med.*, 1941, **10**, 65.

activity."[3] Experimental work carried out from a variety of aspects shows that, while restriction of fat is indeed essential in conditions of strain or damage to the liver, restriction of protein is not merely unnecessary but positively harmful.

Best[4] has summarized the work on fatty degeneration of the liver which has grown out of the original discovery of insulin. Depancreatized dogs which are kept alive by insulin eventually develop large fatty livers. The fatty degeneration of the liver can be prevented by feeding the dogs with raw beef pancreas. Successive discoveries showed that the same curative effect was exerted by lecithin (which is a compound of fat, phosphoric acid, and choline) and by choline alone. It is now clear that choline accelerates the formation of phospholipids and the turnover of fat in the liver. Most of the recent work has been done on white rats, which develop fatty livers and eventually cirrhosis when they are fed on diets very rich in fat. Fatty degeneration can be prevented not only by choline but also by casein, methionine, and the choline-like amine, betaine. These observations have given rise to the hypothesis that the protein (casein) acts by virtue of its amino-acid (methionine), which provides the labile methyl groups out of which choline is built up and which are essential for the orderly metabolism of fat in the liver. The type of fatty liver upon which these substances act specifically is that due to relative or absolute deficiency of choline, but it has also been shown that choline accelerates the disappearance of fat from a liver which has been poisoned by phosphorus or carbon tetrachloride. A second important factor for the integrity of the liver is an unidentified component of the vitamin B complex which is present in yeast. Degenerative changes develop in the livers of rats and rabbits fed on diets which are deficient in vitamin B, but they can be prevented by the addition of yeast extract. Moreover, yeast diminishes or prevents the liver damage caused by arsenic, "butter yellow," and high fat diets. Webster[5] has found indications that molasses may have a like protective action. Whipple,[6] who approached the problem in relation to hypoproteinaemia, has shown that the dog whose plasma has been depleted by repeated removal of plasma protein is very susceptible to intoxication by drugs such as chloroform and arsenicals. This susceptibility can be promptly removed by large protein feedings or considerable amounts of plasma given by vein. Further, methionine will protect the plasma-depleted dog against chloroform anaesthesia, though other amino-acids which do not contain sulphur are inert in similar experiments. Lecithin and choline are likewise inactive. The mechanism of action of methionine therefore differs in hypoproteinaemia and in overfeeding of fat, and methionine is evidently a key substance in the metabolism of the liver.

It would seem rational to apply these experimental data to the prevention and treatment of hepatitis in man. Diets should be low in fat and high in protein and carbohydrate. The construction of such a diet is not altogether easy, for many protein foods, such as meat, eggs, and cheese, are relatively rich in fat. Vegetable protein, which is easier to secure in wartime than animal protein, has been regarded as particularly suitable for disease of the liver. A useful ingredient in this country is skimmed milk, whole or dried, which is in fairly free supply at the present time and which contains the valuable protein casein. With this it is not difficult for the dietitian to devise diets containing approximately 100 g. protein, as little as 20 g. fat, and enough carbohydrate to supply the necessary calories. As the fats are reduced, it is wise to administer concentrates of fat-soluble vitamins A and D, and vitamin K if there is evidence of prothrombin deficiency. Hypoproteinaemia should be corrected by transfusion of plasma. Baker's yeast should be prescribed, and increased, if tolerated, from 3 teaspoonfuls to 1 to 3 oz. a day. Molasses is harder to come by, but a not unpleasant drink can be concocted on a basis of yeast and molasses. Such a drink might be offered as an alternative to the draught of magnesium sulphate which is so popular with workers going on duty on the T.N.T. plants in some of the Royal Ordnance Factories. Pure amino-acids are expensive, and they are not always tolerated well by mouth. No information is available about the use of methionine in man, but favourable results have been reported[7] from the administration of choline chloride in a dose of 1 g. daily in cirrhosis of the liver, together with a diet like that outlined above.

[3] *Text Book of Medical Treatment*. By D. M. Dunlop, L. S. P. Davidson, and J. W. McNee. Edinburgh, 1942, 2nd edition, p. 640.
[4] *Science*, 1941, **94**, 523.
[5] *J. clin. Invest.*, 1942, **21**, 385.
[6] *Amer. J. med. Sci.*, 1942, **203**, 477

## RHYTHM OF THE FEMALE SEX CYCLE

It has been generally believed by endocrinologists that the rhythmic nature of the sexual processes in the uterus and vagina could be explained by the interrelation of pituitary and ovarian secretions. The growth of the ovarian follicles is under the control of a follicle-stimulating pituitary hormone. The fluid formed in the growing follicles is rich in oestrogen. Oestrogens in excess depress pituitary function but first appear to stimulate production of the pituitary luteinizing hormone. There is experimental evidence for all the above statements, and if we assume that the corpora lutea produce less oestrogen, so allowing the secretion of follicle-stimulating hormone to begin again, we have gone a long way to unravel the mechanism of the ovarian cycle: the oestral and menstrual cycles in the lower and higher vertebrates were assumed to be a reflection of this ovarian cycle. Some years ago, however, Zuckerman[8] observed that regular cyclic uterine bleeding was induced in an ovariectomized monkey by the injection of a constant daily dose of oestrone. The dose had to be carefully adjusted: with too much oestrone no bleeding occurred until some time after stopping the injections (oestrone-withdrawal bleeding); if too little were given there was no bleeding at all. Zuckerman[9] has lately confirmed his original finding in a group of 15 ovariectomized Rhesus monkeys, 10 of which experienced periodic uterine bleeding when injected daily with a constant threshold dose of oestrone; the average length of time between successive bleedings in 68 of these "artificial threshold cycles" was 43 days, which did not differ significantly from the length of the normal menstrual cycle in a control series collected by Corner,[10] though somewhat longer than that of a larger control series collected by Zuckerman himself.[11] Similar threshold oestrous cycles have been observed in rats injected daily with an appropriate dose of oestrone[12] and the length of the cycles shown to be the same as that of normal oestrous cycles in intact rats.[13] These facts clearly demonstrate that a fluctuating secretion of oestrogen by the ovary is not essential to explain the cyclic changes in the uterus and vagina.

Last year Bourne and Zuckerman,[14] in a more extensive study of these artificial cycles, found that they could still be produced in hypophysectomized ovariectomized rats,

[7] *J. Amer. med. Ass.*, 1942, **118**, 1403.
[8] *Proc. roy. Soc.*, B, 1937, **123**, 441.
[9] *J. Endocrinol.*, 1941, **2**, 263.
[10] *Cont. Embryol.*, Washington, 1923, **15**, 73.
[11] *Proc. zool. Soc. Lond.*, Ser. A, 1937, **107**, 315.
[12] Del Castillo, E. B., and Calatroni, C. J., *C.r. Soc. Biol.*, Paris, 1930, **104**, 1024.
[13] *J. Physiol.*, 1938, **92**, 12P.
[14] *J. Endocrinol.*, 1941, **2**, 268.

but were elicited only rarely in the absence of the adrenal glands, even though the rats were given daily injections of desoxycorticosterone which kept them alive and allowed the continuance of the oestrous cycle in adrenalectomized rats with intact ovaries. They concluded that the rhythmic nature of the vaginal changes was determined by the adrenals. They then[15] investigated the adrenal glands during normal and artificial oestrous cycles. Painstaking histological examinations and measurements were made of glands removed in the oestrous and di-oestrous phases of the cycles and the results compared statistically. These statistics are too detailed for analysis here, but the following main facts emerged. In both normal and artificial threshold cycles the adrenal glands were heavier and bulkier during oestrus than during di-oestrus. These fluctuations were practically confined to the cortex of the gland, and within the cortex it was the zona fasciculata that was chiefly affected. The alterations in volume of this zone were brought about by changes in the size of the cells and not in their number. It was also found that these adrenal fluctuations were present during artificial oestrous cycles produced in rats with both hypophysis and ovaries removed. All of this is strong corroborative evidence for the essential role of the adrenals in causing cyclic changes in the accessory sex organs. How it brings these effects about is a matter for speculation. The authors offer three possible explanations: first, the adrenals may induce cyclic hydration and dehydration of the reproductive tract with consequent variations in sensitivity; secondly, their known production of oestrogen may be cyclic and subthreshold, reaching threshold levels only when supplemented from some other source; or, thirdly, the glands may yield fluctuating amounts of anti-oestrogenic substances such as androgens or progesterone. It will be seen that all these explanations shirk the problem of explaining the cyclical nature of the effects. A cycle produced by the combined co-operation and antagonism of pituitary and ovarian secretion could be visualized, but on the available evidence the adrenal appears to be intrinsically cyclic, which, if it is true, is much more difficult to comprehend. A menstruation centre in the hypothalamus has been postulated[16]—perhaps there is a hypothalamic–adrenal relation similar in some ways to the pituitary–ovarian one.

## TOURNIQUET FOR HEART FAILURE

The application of venous tourniquets to the limbs has been practised instead of venesection in cases of heart failure for a number of years since its introduction by Danzer in 1928. The peripheral venous bed is turned into a reservoir in which may be stored about 12 to 15% of the circulating blood volume. The method was shown to be effective in the treatment of left ventricular failure by Weiss and Robb in 1933. An interesting light is thrown on its mechanism by Kountz, Smith, and Wright,[17] who used a machine which maintained inflation of cuffs placed on all four limbs for four minutes and deflation for one minute, the latter so arranged as to operate on each limb in turn, so that three limbs were always congested. The authors found that cases of left ventricular failure responded very well, but that those with right ventricular failure, as in acute or chronic cor pulmonale, did not. The point of interest was this: while the venous pressure fell and kymographic pulsation of the heart diminished (the expected results of lessening the venous return), the size of the heart, as measured by its transverse diameter, increased appreciably in normal subjects and in two patients with mitral stenosis. Cases of left ventricular failure showed no such increase. On the contrary, two of these showed a smaller heart shadow during venous compression. No explanation of this phenomenon is available. Cardiac output was not measured; but as neither the pulse rate nor the blood pressure altered appreciably, whereas the venous pressure and amplitude of cardiac pulsation fell, it may be assumed that the cardiac output fell too. Before looking for the solution the facts should be confirmed, for very few cases seem to have been studied in this paper. However, the method of treating orthopnoea and paroxysmal cardiac dyspnoea by compression of the limb veins is again brought before the notice of physicians.

[15] *J. Endocrinol.*, 1941, **2**, 283.
[16] E.g., Theobald, G. W., *British Medical Journal*, 1936, **1**, 1038.
[17] *Amer. Hear J.* 1942, **23**, 624.

## FAKED FITS AND ABSENT RECORDS

The winter session of the General Medical Council was remarkable for a number of cases in which complaints by the Ministry of Labour and National Service were lodged against doctors on the ground that they had given false or misleading certificates to enable young men to evade military service. The evidence threw light upon a grotesque system which has been in operation whereby men due for appearance before medical boards have been coached by some elusive person—sometimes a man and in other cases a woman—in the simulation of the symptoms of epilepsy. Under the guidance of this person, who posed as a relative, the Army-shy young man was made to sham fits, was then taken to a doctor, or sometimes a succession of doctors, and medical certificates were obtained which were in due course presented to the medical board and succeeded for a time in imposing on the authorities. Sums amounting to hundreds of pounds were mentioned in connexion with these frauds. One young man (who incidentally has since been discharged from the Army on account of osteomyelitis) confessed in the witness box that he had paid 350 guineas to his "aunt" who showed him how to convince doctors, not of his lameness, but of his long-standing epilepsy, a condition from which he had never suffered. A witness told the Council how he was instructed to behave—to stroke his nose in a certain way, to take a quantity of black coffee the night before and have very little sleep, and to try to bite his tongue. Even doctors such as those on medical boards—against whom, of course, there was no breath of suspicion—were impressed, and in certain cases, it was said, when the interesting "patient" arrived they did not allow him to get out of the car but came one by one and looked at him in the vehicle. A final touch was added to the situation by the fact that several of these young men held driving licences, and one of them, who had originally been put in Grade 4 as an epileptic, but was afterwards re-graded, stated that he was now in the Army as a motor-driver. Sometimes, however, the chief interest in a case which comes before the General Medical Council lies in some incidental revelation. In certain of these cases the astonishing thing was not so much the issue of wrongful certificates as the manner in which a large practice was conducted without any proper records even of medicines supplied, not to speak of clinical details. One of the respondent doctors, who stated that his practice brought him in over £3,000 a year, admitted in the witness box that, although for his private patients he did his own dispensing, he had kept no records whatever. Comment was made on the fact that he had given luminal and other drugs to the supposed epileptics mentioned in the charge (and he said that at the relevant time he had 20 or 30 people in his practice whom he was treating for epilepsy), but no note of this appeared in his books. The only entries relating to the cases were in his diaries and these were merely records of fees paid or to be charged

Such absence of records is, of course, not a fault which brings a practitioner within the purview of the Council, but it is a highly questionable way of conducting a practice. It is disadvantageous to the patient who may present himself again for treatment after a lapse of time if the doctor has to rely solely on his memory as to the treatment given him on the previous occasion, and it may be damaging to the doctor himself if at some later date his treatment should be called in question. The excuses of a large and busy practice are of no avail; the larger the practice the more necessary it is, in the interests of good treatment, apart from any possible legal action, that the practitioner should fortify his memory by careful notes, whether the drugs are "dangerous" in the technical sense or not.

## THE BLOOD-BRAIN BARRIER

The conception of a semi-permeable barrier between the blood and the brain dates back to the end of the last century, when it was found that certain substances such as trypan blue or diphtheria toxin failed to produce any change in the central nervous system (c.n.s.) on intravenous injection, while they were very active on intracerebral or intraventricular injection. In recent years there has been a growing interest in the practical application of this theory to medicine, and Friedemann[1] has summarized the present position. It should perhaps be emphasized that the blood-brain barrier is located in the capillary endothelium of the cerebral vessels, and that the cerebrospinal fluid plays no part in this connexion as an intermediary in the exchange of substances from blood to brain. The method of investigation may be illustrated by certain experiments on diphtheria toxin. It was found that the rat is almost immune to intravenous injection of this toxin while highly susceptible to intracerebral injection, which caused striking pathological changes; conversely, in rabbits the protecting dose of antitoxin is the same by the intravenous or the intracerebral route, although the toxin is 20 to 40 times more potent on intracerebral injection. These results suggest that the capillaries of the c.n.s. are relatively impermeable to diphtheria toxin, and so circulatory failure in the early stages of the infection, at least in animals, is probably not due to medullary paralysis. From similar experiments there is additional evidence that tetanus and botulinus toxins reach the c.n.s. by neural rather than by vascular pathways. Adrenaline caused a five- to ten-fold increase in the permeability of the cerebral capillaries to substances such as paraldehyde, strychnine, and ethyl urethane, to which they are already permeable. It was suggested that since adrenaline lowered the intravenous lethal dose of cobra venom for a rabbit from 0.5 mg. to 0.025–0.05 mg., the blood-brain barrier is therefore by analogy permeable to cobra venom. While this conclusion is not perhaps altogether justifiable, the observation is clearly of practical importance in so far as it can be applied to man. Friedemann also concluded that the blood-brain barrier was impermeable to the neurotropic viruses, such as those of poliomyelitis or rabies, which, like tetanus and botulinus toxins, must therefore reach the c.n.s. via the peripheral nerves. Experiments with tetanus and diphtheria antitoxins suggested that they could pass through the cerebral capillaries, but that the antitoxin concentration in the intercellular fluid was only 1/20 to 1/60 of that in the blood plasma. This observation is a further justification for the intrathecal administration of antitetanus serum in cases of tetanus, and explains the slow therapeutic response. Of the various drugs which act on the c.n.s. it was observed that many may act indirectly, as, for instance, by stimulating the carotid sinus. To be sure that they penetrate the blood-brain barrier it is necessary to identify them in the brain after intravenous injection. In this way it has been shown that many alkaloids and the sulphonamides pass the cerebral capillaries, while neoarsphenamine and suramin (Bayer 205) do not.

Friedemann concludes from the large number of observations on this subject that the ability of substances to pass the capillaries of the c.n.s. is determined by their electrochemical properties. So the higher permeability of the blood-brain barrier to electropositive substances may explain the rapid action of cobra venom in contradistinction to the slow action of tetanus and botulinus toxins, which have to make their way along the peripheral nerves into the c.n.s. rather than via the blood stream.

[1] *Physiol. Rev.*, 1942, **22**, 125.

## TANNIC ACID, BURNS, AND THE LIVER

The tannic acid treatment of burns has by many been criticized and by some condemned on account of its local effects, especially when used on the hands and face. Its most violent critics, however, seldom disputed its value as a life-saving measure in extensive burns of the trunk and limbs, although convincing statistical evidence of its superiority over other methods has not been produced. Now comes evidence from America imputing to tannic acid a toxic effect on the liver which may kill the patient. Wells, Humphrey, and Coll[1] report 4 fatal cases of burns in which death was attributed in whole or part to liver necrosis. Suspecting that tannic acid was to blame, they experimented on rats, and by subcutaneous injection of tannic acid produced liver necrosis similar to that found in the fatal burns—the degree of necrosis being proportionate to the dose of tannic acid. The necrosis affects the central part of the liver lobule and is identical with that described by Wilson and his co-workers as being the characteristic lesion of burn toxaemia. It would be premature to conclude that burn toxaemia is tannic acid poisoning, but that is the suggested implication, and other agents such as silver nitrate should be employed by those who hold that coagulation is a desirable part of burn therapy.

One of the advantages claimed for coagulation is control of fluid loss, and with tannic acid now suspect as a poison other methods of achieving this end assume greater interest and importance. Siler and Reid[2] report 134 cases treated by Koch's "primary cleansing, compression, and rest treatment of burns" and claim good results. About a third of the burns were extensive, and only 5 patients died. These workers tried to show by experiments on dogs that the method of pressure dressing controls haemoconcentration and loss of plasma protein, but although their results were suggestive of a beneficial effect they were not statistically significant.

A second advantage claimed for tanning is the control of infection. This end may be attained with more certainty by sulphonamides and/or other agents such as C.T.A.B. In the series reported by Siler and Reid only one patient died of sepsis and in none were sulphonamides used, but meticulous primary cleansing is an essential part of the Koch method. Although tannic acid is suspect as a poison, a comment of Wells is worthy of note, that he would be unwilling to give up a method that has proved so beneficial, even if it did cause an occasional death. But if other agents will produce an equally beneficial coagulation it would seem wise to avoid tannic acid until it has been cleared of suspicion.

[1] *New Engl. J. Med.*, 1942, **286**, 629.
[2] *Ann. Surg.*, 1942, **115**, 1106.

# SOCIAL INSURANCE AND SERVICES

## MEDICAL PARTS OF THE BEVERIDGE PLAN

The proposals in Sir William Beveridge's Report on Social Insurance and Allied Services* which are of most immediate importance to the medical profession are conveniently summarized in three paragraphs taken from different sections of the report. First, among the main provisions of the Plan for Social Security is the following:

"Medical treatment covering all requirements will be provided for all citizens by a national health service organized under the Health Departments, and medical rehabilitation treatment will be provided for all persons capable of profiting by it."

Second, among the principal changes from present practice that the author considers will be necessary is:

"Separation of medical treatment from the administration of cash benefits and the setting up of a comprehensive medical service for every citizen, covering all treatment and every form of disability, under the supervision of the Health Departments."

Third, the report states that no satisfactory scheme of social security can be devised except on the following assumptions:

(A) Children's allowances for children up to the age of 15, or if in full-time education up to the age of 16;

(B) Comprehensive health and rehabilitation services for prevention and cure of disease and restoration of capacity for work, available to all members of the community.

(C) Maintenance of employment—that is to say, avoidance of mass unemployment.

The paragraphs in the report which elaborate Assumption B are given in full below.

### Comprehensive Health and Rehabilitation Services

426. The second of the three assumptions has two sides to it. It covers a national health service for prevention and for cure of disease and disability by medical treatment; it covers rehabilitation and fitting for employment by treatment which will be both medical and post-medical. Administratively, realization of Assumption B on its two sides involves action both by the Departments concerned with health and by the Ministry of Labour and National Service. Exactly where the line should be drawn between the responsibilities of these Departments cannot, and need not, be settled now. For the purpose of the present report, the two sides are combined under one head, avoiding the need to distinguish accurately at this stage between medical and post-medical work. The case for regarding Assumption B as necessary for a satisfactory system of social security needs little emphasis. It is a logical corollary to the payment of high benefits in disability that determined efforts should be made by the State to reduce the number of cases for which benefit is needed. It is a logical corollary to the receipt of high benefits in disability that the individual should recognize the duty to be well and to co-operate in all steps which may lead to diagnosis of disease in early stages when it can be prevented. Disease and accidents must be paid for in any case, in lessened power of production and in idleness, if not directly by insurance benefits. One of the reasons why it is preferable to pay for disease and accident openly and directly in the form of insurance benefits, rather than indirectly, is that this emphasizes the cost and should give a stimulus to prevention. As to the methods of realizing Assumption B, the main problems naturally arise under the first head of medical treatment. Rehabilitation is a new field of remedial activity with great possibilities, but requiring expenditure of a different order of magnitude from that involved in the medical treatment of the nation.

427. The first part of Assumption B is that a comprehensive national health service will ensure that for every citizen there is available whatever medical treatment he requires, in whatever form he requires it, domiciliary or institutional, general, specialist, or consultant, and will ensure also the provision of dental, ophthalmic, and surgical appliances, nursing and midwifery, and rehabilitation after accidents. Whether or not payment towards the cost of the health service is included in the social insurance contribution, the service itself should (i) be organized, not by the Ministry concerned with social insurance, but by Departments responsible for the health of the people and for positive and preventive as well as curative measures; (ii) be provided where needed without contribution conditions in any individual case.

Restoration of a sick person to health is a duty of the State and the sick person, prior to any other consideration. The assumption made here is in accord with the definition of the objects of medical service as proposed in the Draft Interim Report of the Medical Planning Commission of the British Medical Association:

"(*a*) To provide a system of medical service directed towards the achievement of positive health, of the prevention of disease, and the relief of sickness; (*b*) to render available to every individual all necessary medical services, both general and specialist, and both domiciliary and institutional."

428. Most of the problems of organization of such a service fall outside the scope of the report. It is not necessary to express an opinion on such questions as free choice of doctor, group or individual practice, or the place of voluntary and public hospitals respectively in a national scheme. It is not necessary to express an opinion on the terms of service and remuneration of doctors of various kinds, of dentists and of nurses, except in so far as these terms may affect the possibility of diminishing and controlling sickness and so may affect the finances of the Social Insurance Fund. Once it is accepted that the administration of medical treatment shall be lifted out of social insurance to become part of a comprehensive health service, the questions that remain for answer in this report are, in the main, financial. Shall any part of the cost of treatment, and if so what part, be included in the compulsory insurance contribution? But, though that question is in itself financial, the answer to it may affect the organization of the service and may therefore depend in part upon views as to organization.

429. In dealing with this financial question, it is desirable to consider separately domiciliary treatment, institutional treatment, special services like dental and ophthalmic treatment, and subsidiary services such as supply of medical or surgical appliances, nursing and convalescent homes.

430. *Domiciliary treatment* is now paid for by persons subject to health insurance, for themselves by compulsory contributions, for dependants either by a charge for treatment when it is given or more rarely by voluntary contribution through associations for public medical service. There is no obvious reason, apart from a desire to keep the insurance contribution as low as possible, why insured persons should be relieved of this burden wholly, in order that they may bear it as tax-payers. If importance attaches to preserving the contributory principle for cash benefit, it attaches also to contribution for medical treatment. There appears to be a case for including part of the cost of domiciliary treatment in the insurance contribution. This means that a proportion of the receipts of the Social Insurance Fund would be paid by the Fund to the Health Departments as a grant towards the cost of the medical service. The administration of this money would rest with the Health Departments.

431. But one consequence of this suggestion has to be noted. The Report proposes a compulsory social insurance scheme without income limits. Its contributing Classes I, II, and IV, though they pay different contributions according to the cash benefits for which they insure, are not income classes; each contains rich and poor. Any contribution for medical treatment must apply to all these classes, to every one in each of them, and must cover their dependants in Class III (Housewives) and Class V (Children). If a contribution for medical treatment is included in the insurance contribution, contributions will cover not 90% of the population (the present insured persons and their dependants), as is assumed in the Draft Interim Report issued by the Medical Planning Commission, but 100% of the population. This will not, of itself, put an end to private practice. Those who have the desire and the means will be able to pay separately for private treatment, if the medical service is organized to provide that, as they may pay now for private schooling, though the public education system is available for all. But no one will be compelled to pay separately. The possible scope of private general practice will be so restricted that it may not appear

* Cmd. 6404. H.M. Stationery Office. (2s.)

orth while to preserve it. If, therefore, it is desired to preserve substantial scope for private practice and to restrict the right service without a charge on treatment to persons below a ertain income limit, it will not be possible to include a payment or medical service in an insurance contribution which all are equired to pay irrespective of income.

432. *Institutional treatment* is not included in the present ealth insurance contribution except to a small extent as an dditional benefit. It is obtainable by any citizen in a public ospital subject to recovery of the cost—that is to say, to ayment according to his means, or free if he has no means. t is obtainable in a private hospital, as a rule either in virtue f previous voluntary contribution through a hospital conributory scheme or on payment according to means as agreed ith the hospital almoner. The growth of hospital contributory chemes in the years just before this war has been remarkable. hey are stated to cover now more than 10,000,000 wage arners and they produce more than £6,500,000 a year for the oluntary hospitals; the cost of collecting this money is put t about 6%; in London and some other parts of the ountry contribution to a Hospital Saving Association qualifies he contributor for free treatment either in a voluntary hospital r in a public hospital as may best suit his case. The Ministry f Labour family budgets in 1937-8 showed an average payent to hospital saving associations of 3½d. a week in every ndustrial household and 3d. a week in every agricultural house-old. British people are clearly ready and able to pay conributions for institutional treatment. Should a payment for his purpose be included in the compulsory insurance contribuion, and be passed on as a grant from the Social Insurance Fund to the Health Departments towards the maintenance of he institutions? The answer to this financial question, like he answer to the similar question as to domiciliary treatment, nvolves problems of organization as well as finance. If a ayment for institutional treatment is included in the compulsory insurance contribution, there will be little or nothing eft for which people can be asked to contribute voluntarily, nd an important financial resource of the voluntary hospitals ill come to an end. It will then be for the Health Departments o use the grant that they will receive from the Social Insurance Fund in whatever way best fits their hospital policy. If it is ot included, people of limited means will have the choice, as t present, of contributing voluntarily beforehand or of paying t the time of treatment, according to means.

433. The main considerations relevant to the choice between hese alternatives are:

(i) The importance of securing that suitable hospital treatment is vailable for every citizen and that recourse to it, at the earliest oment when it becomes desirable, is not delayed by any financial considerations. From this point of view, previous contribution is he ideal, better even than free service supported by the tax-payer. People will take what they have already paid for without delay when hey need it, and they pay for it more directly as contributors than s tax-payers. But it can be argued that, under the present system, people do not in practice delay taking hospital treatment when they eed it; their general practitioner will advise going to hospital, as oon as it becomes necessary, and if they are not voluntary conributors they will be asked to pay only according to their means. t is possible that the main practical reasons which now delay recourse to hospital after it has become desirable are not difficulties bout paying for the treatment, but either (*a*) deficiency of accommodation or (*b*) unwillingness or inability to give up work or household duties in order to be treated. A suggestion for meeting the ast-named difficulty is made in para. 344.

(ii) Hospital policy, particularly in relation to the place of voluntary hospitals, the terms of service and pay of their staffs, and the desirability or the reverse of allowing arrangements whereby individuals, whether through membership of a voluntary association or by special payment, can get choice of specialists or hospitals or special treatment in them.

(iii) Financial policy, and particularly the question of the optimum size of the insurance contribution and of the security budget in relation to the ordinary budget.

435. *Dental and ophthalmic treatment and appliances* are now overwhelmingly the most popular of the additional treatment benefits under national health insurance. That is to say, they are being paid for in part by compulsory contributions and for the rest mainly by a charge when treatment is given. There is a general demand that these services should become statutory benefits available to all under health insurance. There appears to be ground for regarding a development of preservative dental treatment as a measure of major importance for improving the health of the nation. This measure involves, first, a change of popular habit from aversion to visiting the dentist till pain compels into readiness to visit and be inspected periodically; it involves simultaneously, with creation by these means of a demand for a larger dental service, the taking of steps to organize a larger supply of the service. That the insurance title to free dental service should become as universal as that to free medical service is not open to serious doubt. The only substantial distinction which it seems right to make is in the supply of appliances. To ensure careful use, it is reasonable that part of the cost of renewals of dentures should be borne by the person using them. This might possibly be extended to the original supply. The same holds true of optical appliances.

436. *Surgical appliances, convalescent homes, and nursing* are less widely provided as additional benefits, but are essential to a comprehensive health service. Decision as to making these subsidiary services contributory or non-contributory for the individual depends on the line taken in regard to the major problems of domiciliary and institutional treatment. It is reasonable that insured persons should contribute something for such services, as they have shown themselves able and willing to do in the past; in regard to appliances of all kinds, the terms of supply and renewal must be such as to give an incentive to careful use. But it would be anomalous to require compulsory contributions for special and subsidiary purposes if the main services were non-contributory.

437. This review of some of the problems involved in establishing a comprehensive medical service makes clear that no final detailed proposals, even as to the financial basis of this service, can be submitted in this report. It suggests the need for a further immediate investigation, in which the finance and the organization of medical services can be considered together, in consultation with the professions concerned and with the public and voluntary organizations which have established hospitals and other institutions. From the standpoint of social security, a health service providing full preventive and curative treatment of every kind to every citizen without exceptions, without remuneration limit and without an economic barrier at any point to delay recourse to it, is the ideal plan. It is proposed accordingly that, in the contributions suggested as part of the Plan for Social Security, there shall be included a payment in virtue of which every citizen will be able to obtain whatever treatment his case requires, at home or in an institution, medical, dental, or subsidiary, without a treatment charge. It is proposed that the sums derived from these payments shall be transferred to the Department or Departments concerned with the organization of the health service to meet part—it can only be part—of the total cost. But these proposals are provisional only, subject to review in the light of the further inquiry suggested, in which organization and finance can be dealt with together. The primary interest of the Ministry of Social Security is not in the details of the national health service or in its financial arrangements. It is in finding a health service which will diminish disease by prevention and cure, and will ensure the careful certification needed to control payment of benefit at the rates proposed in this report.

438. Assumption B covers not only medical treatment in all its forms, but also *post-medical rehabilitation*. In regard to the latter, as in regard to the former, it would be inappropriate here to discuss details or organization. During the preparation of this report the practical problems of rehabilitation have been under consideration by the Departments concerned, and it is hoped that practical measures will follow. Rehabilitation is a continuous process by which disabled persons should be transferred from the state of being incapable under full medical care to the state of being producers and earners. This process requires close co-operation between the Health Departments and the Department concerned with employment—that is to say, the Ministry of Labour and National Service. Whether this co-operation can be secured best by the setting up of an executive organ representative of both sides or by allocation of specific duties to each Department is a problem of departmental organization on which it would

be inappropriate here to express an opinion. It is sufficient to put forward three general propositions:

(*a*) That rehabilitation must be continued from the medical through the post-medical stage till the maximum of earning capacity is restored, and that a service for this purpose should be available for all disabled persons who can profit by it irrespective of the cause of their disability.

(*b*) That cash allowances to persons receiving rehabilitation service should be the same as training benefit, including removal and lodging allowances where required.

(*c*) That the contributions paid by insured persons should, as in the case of medical treatment, qualify them for rehabilitation service without further payment.

# Correspondence

## Hand and Finger Lesions

SIR,—During recent months a great deal of correspondence has appeared in your columns on complacency in anaesthetics. May I call attention to another branch of medical practice—the treatment of injuries and infections of the hand and fingers—where complacency is the only explanation of, though no excuse for, the deplorable results which are so often met with?

It has been estimated that in peacetime injuries of the hand and fingers were responsible for 35 to 45% of the total sum paid as compensation for all injuries, and at a meeting of the British Orthopaedic Association at Nottingham on Sept. 25 and 26 Dr. Donald Stewart stated (Oct. 24, p. 493) that of 1,000 consecutive accidents in one factory 52% were finger injuries only. It is the same story in the Services, where these lesions cause longer hospitalization, a higher degree of permanent disability, and more invaliding than almost any other condition. A small part of the blame for the poor results may be due to the severity of the original injury or to the failure of the patient to present himself in time for treatment to be effective, but impartial analysis forces one to the unpleasant conclusion that by far the greater share of the blame is due to neglect or mismanagement by the patient's medical advisers.

An open wound of the finger is no less worthy of skilled and careful treatment than an open fracture of the femur, but too often it is classed among the trivialities of minor surgery. Medical men who would never dream of using a scalpel for any other purpose gaily "operate" on these cases without any adequate attempt at asepsis and with little or no appreciation of the principles which should govern their treatment. This attitude is understandable, for these lesions receive little attention in the curriculum of most medical schools. Students see injuries and infections of the fingers left to the most junior hospital officers and more or less ignored by the honorary staff.

Improvement will only be attained if all those who are responsible for the surgical education of students take more trouble than most of them do at present to show by their teaching and example the importance and seriousness of lesions of the fingers. It is fortunate that there is no subject that lends itself more to dogmatic teaching, for it is one of the very few exceptions where theoretical knowledge is more important than experience or technical ability. Good results can be obtained by anyone who is prepared to learn and obey a few cardinal principles: careful pre-operative examination; perfect asepsis at operation and re-dressings; a dry field; the avoidance of incisions in the mid-line of the finger, buried sutures or ligatures, rubber drains, fomentations, baths, or passive movements; immobilization of the affected parts in the position of function, and mobilization of the unaffected fingers, etc.

The education of those who are already qualified is a more difficult task, but there is a way in which I believe it could be done. Since the beginning of the war a spate of literature has poured out from the medical departments of the fighting Services, the Medical Research Council, and the E.M.S. instructing us what to do and what not to do for this and that condition. Of the educational value of these memoranda there can be no doubt. Is it too much to hope that one or other of these bodies, or better still a joint committee representing them all, will formulate and issue a memorandum "The Principles of the Surgery of the Hand and Fingers"?

I am, etc.,

J. B. OLDHAM,
Surg. Commander, R.N.V.R.

## The Sulphonamide Problem

SIR,—Surg. Cmdr. E. A. Gerrard's letter (Nov. 28, p. 6 about the uses and abuses of the sulphonamide group of dr is most timely. The general public appears to regard the u of these drugs from one of two aspects: either as a verita elixir of life which no one must neglect to employ or as kind of last rite in a desperate emergency. From the profe sional point of view the situation is scarcely less unhapp Within a very short period instances have come to my not of the administration of sulphonamides to an infant cutti teeth, to cases of septic finger of minor degree, and to patient with a small boil in the axilla. The dose employe in this last case could not have caused the slightest inco venience to any but a moribund staphylococcus, though t patient proved much more vulnerable to its action. The u of sulphonamide powder in recent wounds is in danger being regarded as a substitute for and not as an additional saf guard to careful excision. Now that the powder is recom mended as a first-aid dressing steps should be taken to ensu that proper excision of the wound should not be delayed neglected on this account.

Sufficient information is now available for the preparati of a survey of this group of drugs. This might be undertake by an authoritative body such as the Medical Research Counci and the production of a film, preferably in colour, should b considered. A film on this subject has been made in Americ but has not yet reached this country. By the kindness one of the manufacturing firms a colour film on the treatme of pneumonia was recently shown in this area. So great w the interest aroused that there occurred what one only to rarely sees at a medical meeting—a "full house." I believ in this way we have an ideal method of dealing with a urgent problem quickly, scientifically, and in a manner t arouse the greatest interest.—I am, etc.,

Berkhamsted. R. GRAINGER, F.R.C.S.

## Ship-borne Small-pox

SIR,—It is apparent that the story of the outbreak of sma pox in Glasgow, 1942, is not ended. Following the introductio of ship-borne infection into that city the possibility has no arisen that small-pox may once again become endemic i these islands. A similar situation threatened to develop afte the arrival of the *Tuscania* at Glasgow in April, 1929, and o the *Cathay* at the Port of London in March, 1938. On eac occasion infection was carried and spread ashore.

Small-pox on a ship at sea is an example of an infectiou disease occurring in a closed community, where conditions ar almost ideal for containing the epidemic. I suggest that, a a time when this country is free from small-pox, a case ma be made out for enforcing absolute quarantine on an infecte ship. This measure, combined with the efficient use of vaccina tion, should determine the outbreak within twenty-one day —I am, etc.,

Dartford, Kent. J. PICKFORD MARSDEN.

## Cleft Palate

SIR,—Mr. H. P. Pickerill (May 30, p. 680) has taken me to task for some remarks I made in an article on cleft palat published in the *British Journal of Surgery* (Oct., 1941), an he has set me some interesting questions to answer. I mus apologize for my delay in replying, but the *Journal* containin his letter has only just reached me.

I was a little disappointed that a surgeon of Mr. Pickerill experience should consider "extravagant" my strong con demnation of the use of a tubed pedicle graft for repairing a cleft palate, but I read the description of his cases treate by intra-oral tubed pedicles with great interest. Mr. Pickerill first two cases were not examples of cleft palate but of gunsh wounds of the palate; my paper did not include a descriptio of wounds of the palate. I agree that gunshot wounds wi enormous loss of tissue might require operations which I shou characterize as fantastic if used for the repair of the small congenital defects. Though my unit has recently treated number of gunshot wounds involving the palate, we have

to see a case which required a tubed pedicle graft for the repair of the palate.

I still consider repair of any type of congenital defect in the palate by means of a tubed pedicle graft to be a fantastic operation, and I believe Mr. Pickerill when he says that these procedures "tax the skill of the operator to the utmost in their final stages." It seems to me that the patience and forbearance of the patient are even more severely taxed than the skill of the operator, for the patient, following the operation, has to sustain a pedicle attached at one end to the palate and at the other, presumably, to some part of the upper extremity or chest for ten to fourteen days. Yet Mr. Pickerill says of these operations: "They certainly do not, as stated, cause pain to the patient." I cannot believe that Mr. Pickerill does not visit his patients on the day after operation.

Not having seen her I cannot say what I should have done for the "young woman" under Mr. Pickerill's care who was "panic-stricken" at the prospect of the dental extractions which were to rob her obturator of its sole support. Possibly her panic was in part due to Mr. Pickerill's proposal that he should attach her arm to her palate by a tubed pedicle. I can well imagine Mr. Pickerill's satisfaction at the gratitude and pleasure of the parents of the boy who was "the leader of his school in sport and study" when a tubed pedicle enabled him to acquire good speech. But would a Wardill or a Gillies-Fry procedure have earned the gratitude and pleasure not only of the proud parents but also of the boy himself? I think it might have done.

I do congratulate Mr. Pickerill on his great technical skill in the performance of these elaborate operations. I congratulate Mrs. Pickerill even more heartily, not only for reconstructing the lip and palate of the baby mentioned with anatomical perfection but also for saving the poor child from one of Mr. Pickerill's tubed pedicle operations.—I am, etc.,

MICHAEL C. OLDFIELD,
M.E.F. Major, R.A.M.C.

## The Teaching of First Aid

SIR,—The importance of a widespread knowledge of the elements of first aid in present circumstances is generally acknowledged; but, owing to the existence side by side of two distinct official systems, lecturers and examiners are confronted by a handicap which, one would think, ought to be removed at least for the duration of the war.

No one would urge the British Red Cross Society and the St. John Ambulance Association to merge their separate identities—each has its own special field of service—but the present liaison might, I think, be drawn even closer in one respect for the time being. As a lecturer under both systems, I have become more and more impressed by the advantages which would accrue from a common first-aid syllabus and a conjoint examination held under the auspices of both bodies. This would obviate the necessity for hard-pressed doctors to bear in mind two separate procedures. Moreover, it would eliminate the contretemps which sometimes arises when an examiner more conversant with Red Cross methods is appointed to examine a St. John class and vice versa, canalize into one channel energies now dissipated in two directions, and simplify the problems of intending students.

With a little give-and-take on both sides the difficulties of such a readjustment should not prove insuperable. If desired, the original position could be restored after the war, though possibly the advantages of one official system combining the best points of the two would by then have become so obvious that the change might become a permanent arrangement.—I am, etc.,

Grasmere. E. W. ADAMS.

## Control of Venereal Disease

SIR,—I would endorse the recommendations given by Drs. David Erskine and V. E. Lloyd (Nov. 21, p. 617), particularly the last sentence that the problem might well be discussed now so that suitable arrangements can be prepared in advance. In the Services the compulsory treatment which is so desirable can be effected without any difficulty and with none of the troubles attending on seeming publicity in similar circumstances in civilian life.

With regard to the new Defence Regulation 33B, I would submit that there are some serious defects which will prevent its being of use in many cases. First, it is the experience of many clinics at present that false names and addresses are frequently given by those attending; particularly is this so among men. It would be desirable, and may even become necessarily compulsory, to demand the production of the National Registration identity card on first attendance at the clinics. Authorities concerned might well be advised to practise this at present, even though they have no powers to compel its production. The identification of suspected persons to be named by two separate patients will obviously be prejudiced if fictitious names and addresses persist. Secondly, I am told that it is seldom that persons are named by those who attend—the element of fear of breach of "treatment in secrecy" obviously prevents such notification. The almoner of one large clinic assures me that there is the greatest difficulty, even when dealing with numbers and not names, in tracing contacts. It would seem unlikely that registration will therefore be as effective until a wider power to enforce observation and treatment becomes law.—I am, etc.,

Nailsea, Nr. Bristol. W. ARTHUR GORNALL, M.D.

SIR,—In the issue of your *Journal* for Nov. 21 you say with regard to the number of persons who fail to continue treatment for V.D.: "Major Laird points out that the defaulter rate of England in 1935 at 82.5% compares most unfavourably with the corresponding defaulter rate of 2.5% for Sweden." Yet the report of the Chief Medical Officer of Health for 1937 has the following: "The percentage of patients on the books of the treatment centres who discontinued attendance prematurely during the ten years ending December 31, 1937, were as follows":

| | Syphilis | | Gonorrhoea | |
|---|---|---|---|---|
| | Males | Females | Males | Females |
| 1928 | 24.7 | 22.8 | 27.5 | 20.4 |
| 1931 | 24.2 | 22.2 | 29.3 | 21.2 |
| 1934 | 21.9 | 20.7 | 23.9 | 22.9 |
| 1937 | 17.4 | 17.9 | 21.8 | 18.2 |

If the average percentage of all patients defaulting in 1934 is just over 22%, and just over 18% in 1937, it is curious that it should have leapt to such a figure in 1935. There is no mention of this extraordinary rise in the Minister's report for 1935.—I am, etc.,

E. M. TURNER,
London, S.W.1. Secretary, Association for Moral and Social Hygiene.

*** The statement in Major Laird's paper, summarized in the leading article, was as follows: "An investigation in various parts of Staffordshire, in which I collaborated, showed that in 1937 50% of cases of early syphilis and 30% of gonorrhoea cases defaulted. Sir Kingsley Wood stated that the percentage of clinic patients in England completing treatment and tests of cure was 12.9% in 1925 and 17.5% in 1935. This puts the defaulter rate for England in 1935 at 82.5%, which compares most unfavourably with 2.5%, the corresponding defaulter rate for Sweden." (*Brit. J. vener. Dis.*, 1942, **18**, 84.)—ED., *B.M.J.*

## Prostatic Smear as a Test for Cure of Gonorrhoea

SIR,—The cure of gonorrhoea is so important from the social and individual health points of view that it is not surprising that physicians have recourse to as many tests as possible in order to establish it with certainty. Of these procedures there is one which seems to me too dangerous in its sequelae and therefore not deserving of such widespread use in the venereal disease centres of this country—namely, the expression of prostatic fluid by massage for microscopical examination. The positive value is questionable, since the direct demonstration of gonococci in this liquid is fraught with so many contingencies that it is purely a matter of chance. Of course the bacteriological culture would considerably enhance the value of the test, but it is seldom practised in the routine work of a busy centre because it is too expensive and time-consuming. But even if this more scientific and accurate method be used, it is still doubtful whether the results would outweigh the possible harmful effects of prostatic massage, for in the early stage of gonorrhoea the maltreatment of the prostatic gland with its spongy structure is a serious matter if gonococci have already invaded it. Any rough handling of the prostate at this stage is the most certain method of disseminating the gonococci from the initial focus to the utmost recesses of the gland, with the additional risk of spreading the infection to the seminal vesicles. We are not entitled to draw analogies from similar procedures in the case of chronic prostatitis, where massage may yield useful therapeutic results, because

in the latter case we are dealing with a type of chronic abscess in which an inflammation of long standing has become localized by means of a surrounding organized inflammatory infiltration, which prevents the possible spread of the infection. In recent acute gonorrhoea any interference with an infected prostate is as dangerous and risky as squeezing a furuncle in the acute stage.

It is certain that in many cases where the material obtained by efficient and therefore forceful massage of the prostatic gland yields a positive result, the subsequent prostatitis and potential vesiculitis are the direct outcome of this exploration, although they may erroneously be regarded as a confirmation of the diagnosis. When it is remembered that the incidence of gonococcal arthritis and rheumatism accounts for about 10% of all cases of chronic arthritis—one of the widely prevalent diseases in this country—and that gonococcal arthritis nearly always indicates the presence of latent prostatitis and/or vesiculitis, it is clear that this whole question deserves thorough consideration and discussion.

Recent experience with the sulphonamide group of drugs suggests that the considerable reduction of chronic complications in gonorrhoea may be due not only to the rapid therapeutic effect obtained, but also, and in no less degree, to the omission of direct interference with the urethra, such as lavage, instillations, etc. Perhaps this point should be borne in mind when prostatic massage is being considered as a control test for the cure of gonorrhoea.—I am, etc.,

Polish Forces. JERZY FEINER.

## Child Health

SIR,—Dr. James Burnet's letter (Nov. 21, p. 616) applies, *pari passu*, to the School Medical Service. This service, established in 1908 under the Education (Administrative Provisions) Act, was stultified from the beginning by being placed under the control of medical officers of health, who are seldom clinicians and as a rule know little and care less about diseases of children. The sad result of this is that, as a general rule, the School Medical Service has become the poor relation in the Public Health Departments.

It is to be hoped that after the war the School Medical Service will be separated from Public Health Departments and established as a separate service under a clinician with special knowledge of diseases of children; and, further, that medical inspection will be carried out in special centres, properly equipped and staffed, away from school buildings, and that existing "care committees" will be abolished and "following up" of cases done by trained nurses.—I am, etc.,

Sunninghill, Berks. EVA MCCALL.

## Loneliness in Infancy

SIR,—I have been greatly interested in the correspondence on loneliness in infancy, and in particular in Dr. Laura Hutton's letter (Nov. 7, p. 558). It certainly seems strange that mothers should deny to infants that ordinary degree of consideration that they would show to their adult acquaintances. To leave a baby to scream is, I agree, criminal, though it requires some experience to tell what exactly is the matter. In nine cases out of ten something very specific is the matter, and can fairly easily be remedied. Infant routine has become, to an illogical extent, dominated by the clock. I can see no merit, however, in a routine which recommends three- or four-hourly feeds and yet allows for a long interval of eight (or more) hours at night, even for newborn babies. Only the baby knows how hungry it is, and to deny it food when it asserts its hunger is a cruelty that one would not practise with more articulate beings.

I would, however, like to join issue with Dr. Hutton on two points. First, with regard to thumb-sucking. I have had four babies in the past six years. All have been treated with a fair degree of leniency, the leniency becoming greater as my experience increases. The two younger babies have not been allowed to cry for more than a very short time before a rescue is effected. Nevertheless, all four have been thumb-suckers. I do not like to think of this as a sign of special mental imbalance. In fact, it seems to me to be a very normal baby pastime, and one that should give rise to no anxiety in the parents, especially if it disappears when the baby starts to handle and play with toys. It seems possible that many very well adjusted people may have been thumb-suckers in their early childhood. No definite evidence has, so far as I know, been produced either to confirm or to deny this possibility.

The same lack of evidence can, I think, be held against Dr. Hutton's implication that loneliness in infancy necessarily gives rise to neurotic personality in later life. I should be interested to know whether so-called normal people have not suffered much the same deprivations as those who require analytical help, but have not reacted so unfavourably to them. Have many really well-adjusted people undergone thorough and deep analysis?

I raise these points largely to reassure myself, as mistakes in dealing with infants cannot be avoided. With Dr. Hutton's general thesis that ordinary consideration is too often denied to very young babies I concur whole-heartedly; and wish that something could be done to re-educate the public away from the clock and back to natural impulse.—I am, etc.,

Stansted, Essex. NANCY SALAMAN.

## Tonsillectomy by Guillotine and Dissection

SIR,—In my article on this subject (Oct. 31, p. 512) I dealt with the methods of tonsillectomy. Dr. E. C. Atkinson's letter (Nov. 21, p. 620) illustrates well the die-hard aspect of some dissectionist schools. Three-quarters of his long letter is devoted to a discussion of the removal of adenoids, which has nothing to say to the case. I must not trespass on your space to discuss its inaccuracies.—I am, etc.,

Guildford. T. B. JOBSON.

*** This correspondence is now closed.—ED., *B.M.J.*

## Future of the Profession

SIR,—Dr. H. E. Collier's excellent letter (Nov. 14, p. 591) on the future of the profession raises important points with regard to medical planning. The spate of letters on this subject has stressed medical organization; there is no mention of actual medical work. A co-ordinated medical service with good working conditions for doctors is undoubtedly needed, but it will not solve our true medical problems. The object of this service will be the maintenance of a healthy population, but how can we hope to achieve this by organizational changes alone?

The futility of our present medical approach—our clinical examination with its growing battery of static investigations—is obvious in all cases save those of established disease. Will the general practitioner, working in a health centre and personally able to follow his patient through hospital investigation, be any better off when "organic disease is excluded" and he still has a patient with real symptoms and complaints on his hands? Will the maternity and child welfare worker be better able to deal with the numbers of physically subnormal children who attend our welfare centres? Will the pathologist with his increasing studies of the infinite variations of bacteria help us much unless we see the need for an equally careful study of individual variations in the subjects whom bacteria attack?

Unless we realize that alteration of our outlook and technique must be part of our reorganization, medicine will remain sterile, irrespective of the framework within which it functions.—I am, etc.,

ROWENA WOOLF,
Finsbury, E.C.1. Assistant Medical Officer of Health.

## Rationed Distribution of Doctors?

SIR,—To meet what is now an urgent need and which will become a paramount need of the Services for doctors, I have severely practical proposals to make. We have had at least a partial rationalization of industry to meet war needs, but no attempt at a co-ordinated plan has been made to obtain maximum efficiency for medical services by the same process. Apart from the obvious waste of skill which this lack of organization entails, injustices result, of which inequality in loss of income is only one. It is not at all impossible to estimate the basic needs in medical personnel per unit of the civilian population; numbers must be reduced to basic needs and therefore all "frills" must be abandoned. One assumes that the demands of the Services are inescapable, and that there is no waste by them of personnel either at home or abroad.

For a 50,000 unit of urban population, I estimate basic needs as: general practitioners 10; public health staff 4 (including one fever hospital resident); surgeons 4; house-surgeons 2 or 3;

anaesthetist 1 ; obstetrician-gynaecologist 1 ; obstetrical house-surgeon or R.M.O. 1 ; specialist physicians (no house-physicians) 2 ; pathologist 1 ; radiology and ophthalmology, equivalent of 1 specialist. Rural population would require about 30% more general practitioners and 20% more public health staff. Only able-bodied men and women under the age of 70 should be included.

The necessary adjustments to make such a service feasible would be: (1) Complete pooling of practices ; immediate establishment of central clinics or health centres, with elected director, roster of services, off-duty time, etc. (2) Taxation or levy for health services on the whole population to meet the costs of medical service in wartime ; no individual fees ; salary for the duration of the war for all doctors on a scale proportionate to service offered plus a factor for age and family obligations. (3) Domiciliary work reduced to an essential minimum. (4) Suspension of school clinics and infant centres (but full maintenance of school and health visitor staff). (5) Compulsory service for all doctors of both sexes under 65 ; no exemption for married women without young children. (6) Hospital resident posts, apart from limited number of specialist training posts, reduced to a 3-months period.

I take my own immediate area, mostly urban, with a population of about 30,000, as an example. There are practising in this area 12 general practitioners, 4 public health staff, 3 surgeons, 1 obstetrician-gynaecologist, 1 specialist physician, 2 pathologists, half-time anaesthetists to the equivalent of 1 specialist, 1 part-time radiologist, 5 hospital residents—total 29, or nearly 1 per 1,000 of the population. Some of the specialists give part-time service to the neighbouring E.M.S. hospital, but this is not such an important factor as to upset the calculation. On the basis outlined, this area would now release for service 1 surgeon, possibly a second surgeon or 1 physician specialist, 1 pathologist, 1 public health officer, 3 or possibly 4 general practitioners, 2 hospital residents. I am an ardent advocate of immensely increased health services, but this great reform must wait until the world is secure from savagery. We shall then expect to have a large reserve of doctors, not enough but still substantial, to inaugurate the new health era. —I am, etc.,

Inverness. D. LEYS.

## Sedimentation Rate

SIR,—It is with a growing feeling of impatience and dissatisfaction that I have read the recent articles and correspondence on the subject of blood sedimentation. It appears to me that the medical profession has adopted this test in complete ignorance of the principles involved. An engineer can make use of his knowledge of sedimentation in rivers to good purpose, and he is working on accurate and scientific methods, which he fully understands. Compare this with the sedimentation of biconcave disks in a sticky solution, and consider the enormous number of variable factors involved. It would appear that medical men are using this test to justify the clinical condition of a patient, when they would be better employed in practising and perfecting their powers of clinical observation, for which they have been trained.

If any medical practitioner is under the impression that he understands the subject, he would be wise to read the recent researches of R. B. Whittington in the *London, Edinburgh, and Dublin Philosophical Magazine*, Jan., 1942 ; *British Journal of Experimental Pathology*, Feb., 1942 ; *Tubercle*, Sept., 1942 ; *Lancet*, Oct. 31, 1942 ; and *Proceedings of the Royal Society*, B, Nov., 1942. Progress has been made in the fundamental study of red-cell sedimentation in these studies.

No one would doubt the value of accurate and reasonable investigation in haematology and blood chemistry, but our attitude to blood sedimentation is unscientific and unhealthy. If, as is now suggested, blood sedimentation is to be conducted in moving vehicles the matter is becoming ludicrous. If the oracular predictions are as reliable as ever under such conditions, medicine can no longer be considered an art or even an inexact science, but a magic cult. I feel sure that there are many engineers at present, with sufficient spare time, who would be only too pleased to investigate the effects produced by size of car, road surface, tension on springs, tyre pressure, etc. Perhaps they could advise us regarding the adjustment of our shock absorbers, and find a formula suitable to make corrections, in case we use the Austin 7 or Rolls 40.

Perhaps I am prejudiced in my desire to preserve scientific accuracy and to understand the tests I employ. At any rate I have abandoned the use of blood sedimentation tests long ago, and it will require reason to make me readopt them. The only value I have ever found from the fashion was that it tended to inhibit the indiscriminate use of gold in the treatment of arthritis, since we were carefully informed that this remedy was unsafe without blood sedimentation control.—I am, etc.,

Blackpool, Lancs. F. M. HILLIARD, M.D., F.R.C.P.I.

*** This correspondence is now closed.—ED., *B.M.J.*

## Working for a Salary

SIR,—Few would deny that the activities of certain medical research workers on a fixed salary have been the means of great relief to suffering humanity, but this does not mean that the issue between a system of fixed salaries and one of competitive incomes has been decided in favour of the former. Many other points besides isolated acts of brilliant accomplishment must be considered before the question is settled. One such point is that research workers, for the most part, are servants of institutions, and that institutions are in the habit of paying their servants fixed salaries. In other words, these men, in common with medical officers of health and officers of civil and military medical services, are chiefly engaged in serving the interests of institutions or organizations, not directly of individuals, and consequently if they are to be paid at all it will be in the manner customary to institutions and organizations.

In contrast with the status of the medical officer consider that of the general practitioner. He serves not institutions but individuals. Here there is an arrangement of mutual advantage between two persons. In return for service rendered the patient transfers to the doctor a whole- or part-claim on goods or services which the latter needs then or may need at some future time. The relation of patient to doctor is that of master to servant. This position is not in any way derogatory to the doctor. "Whosoever would be first among you shall be servant of all." An honest servant will not ask for more than is just, and a great service deserves, though it may not always receive, a corresponding reward.

In general it is true to say that we can each choose one of two masters—the institution or the individual. It does not help matters to denounce one or the other. Each has points in its favour. The institution is an essential part of every civilized society. Fortunately for humanity the necessary institutions appear to obtain, voluntarily or otherwise, enough servants to meet their needs. We G.P.s who serve the individual find him trying at times, but in our heart of hearts, in spite of such blandishments as a fixed and adequate salary, pension, paid holidays, etc., I don't think a majority of us wish to change.—I am, etc.,

Bexley, Kent. E. U. MACWILLIAM.

## Health Centres and Periodic Medical Examination

SIR,—In the leading article on planning and the M.O.H. (Nov. 14, p. 580) I think you come to the crux of the whole matter in your statement: "Clearly the medical profession will need a new kind of education before really effective progress can be made." There can be no fusion of the public health and the general practitioner services until the function of the doctor is revisualized and made comprehensive to embrace preventive and curative medicine.

I do not think that health centres as at present suggested are a practical proposition. This innovation will require to be built up step by step, and in its introductory stage a health centre can be fully occupied with preventive measures.

I fail to find in the suggestions for replanning one of the most important means of keeping the individual healthy, and that is periodic medical examinations. The principle is carried out in the school medical service and partly in the child welfare service. The National Health Insurance service will need to be reorganized to meet this requirement. I suggest, therefore, that the health centre should be the place for carrying out this most important duty. All doctors should be engaged on this work. Medical boards formed by doctors in rota should be set up for this purpose. A team of specialists should be available to deal with any conditions requiring their attention. A report drawn up by the board should then be sent to

the family doctor in each case. Such information will be most valuable to him and will relieve him of essential work which can be done more expertly by the board.

If the whole family is to come under the National Health Insurance system there should be no difficulty in making these board examinations a condition of enrolment in the service. In addition, there is medical inspection for life insurance, medical inspection for the Services (civil and military), the factory service, and so on. The advantages of such initial expert medical inspection are obvious. It supplies the family doctor with the classification of the patient and gives the patient interest in his own health. The subsequent care of each person should be in the hands of the family practitioner, who should have the opportunity of referring a particular case to the board as he considers advisable. From this initial duty of a health centre other spheres will develop in its organization, but I firmly consider the total functions of the health centre should grow up round this preventive work.—I am, etc.,

S. I. BEGGS, M.D., D.P.H.,
M.O.H. Middleton (1921-41).

Morecambe and Heysham.

# The Services

The D.S.O. has been awarded to Capt. S. B. Thompson, N.Z.M.C., and the M.C. to Capts. R. D. I. Beggs and R. P. Lawson, R.A.M.C., in recognition of gallant and distinguished services in the Middle East.

Temp. Acting Surg. Lieut.-Cmdr. A. D. Bateman, R.N.V.R., has been appointed O.B.E. (Military Division) for coolness and devotion to duty during an enemy air attack.

Temp. Surg. Lieut. S. Moss, R.N.V.R., has been mentioned in dispatches for skill and endurance.

Temp. Surg. Lieut. R. C. R. Gethen, R.N.V.R., has received a commendation for bravery in an enemy air attack.

The King has approved the award of the George Medal to Flying Officer J. A. Elliott, R.A.F.V.R. The citation in the *London Gazette* dated Dec. 1 reads as follows:

"In May, 1942, a Boston aircraft crashed shortly after taking off from an aerodrome and burst into flames. An airman who was on duty near by hastened to the scene, where he was joined by 5 soldiers. Although the fire was intense and ammunition was exploding in all directions one member of the crew (the air gunner, who was seen to be hanging out of the turret) was dragged from the wreckage by one of the soldiers and then, with the assistance of the remainder of the party, carried on a stretcher to an ambulance which had arrived. The party was returning to the aircraft, which was then being approached by the station engineer officer and F/O Elliott, a medical officer, when a bomb exploded. The engineer officer was thrown to the ground bleeding from the chest. F/O Elliott, although also knocked down, was uninjured and immediately went to the aid of the engineer officer. He gave him morphine, and at the time was fully aware that other bombs were in the aircraft only 8 yards away. A second bomb exploded, which wounded F/O Elliott, but he valiantly attempted to remove his injured comrade. Eventually F/O Elliott was assisted away by one of the soldiers, whilst the remaining men of the party removed the engineer officer, who was found to be dead. Throughout F/O Elliott displayed great determination and complete disregard for his own safety."

## CASUALTIES IN THE MEDICAL SERVICES

Surg. Lieut.-Cmdr. DAVID SIMPSON, R.N., who was killed on active service last month, was educated at the University of Liverpool, where he graduated M.B., Ch.B. in 1933. Entering the Royal Navy as surg. lieut. in the following year he was promoted surg. lieut.-cmdr. in 1940. He leaves a widow, a member of Queen Alexandra's Royal Naval Nursing Service Reserve. He was a member of the B.M.A.

Surg. Lieut.-Cmdr. NORMAN ALFRED VERNON, R.N.V.R., is reported "missing, presumed killed" in action in November. He was the elder son of Mr. and Mrs. G. Vernon of East Sheen, and received his professional education at St. Thomas's Hospital, qualifying M.R.C.S., L.R.C.P. in 1931. After holding the post of resident medical officer at Worthing Hospital he settled in practice at Petts Wood in Kent and later at Chislehurst, where he was police surgeon. He entered the R.N.V.R. in 1935 and was promoted surg. lieut.-cmdr. in 1940. He leaves a widow.

War Subs. Capt. GEORGE NOEL BRAHAM, O.B.E., M.C., R.A.M.C., died at Baghdad on Nov. 16. Born at Bath on June 24, 1886, he was educated at Manchester and took the Scottish triple qualification in 1909 and the F.R.C.S.Ed. four years later. He held house posts at Ancoats Hospital and Monsall Isolation Hospital before moving to Southampton, where he became senior house-surgeon at the Royal South Hants and Southampton Hospital. In the war of 1914–18 he served in the R.A.M.C., attaining the rank of capt., and was awarded the M.C. for "conspicuous gallantry and devotion to duty. He with four others worked continuously under intense fire and succeeded in rescuing several wounded men from an advanced dressing station, which was untenable. He set a fine example of courage and determination throughout." After demobilization he took the post of medical officer at the Civil Hospital, Baghdad, and later became librarian to the Baghdad Medical Society. He was appointed O.B.E. in 1921 for services in Mesopotamia. In 1923 he took the post of Civil Surgeon, Baghdad, and also became senior surgeon to the Royal Hospital in that city and chief surgical specialist to the Iraqi Health Services. In addition he was deputy senior medical officer to the Anglo-Persian Oil Company, becoming the company's consulting surgeon when he moved to Masjid-i-Sulaiman in Persia in 1928. In 1924 the King of the Hedjaz conferred upon him the Order of El Nahdi (Third Class) in recognition of valuable services rendered. Mr. Braham returned to England in 1929 and settled in practice at Gosport, where he became honorary medical officer to the local memorial hospital. In 1936 he again went to Baghdad, this time to take up the positions of professor of surgery in the Royal Medical College and head of the surgical unit in the Royal Hospital. He was elected president of the Mesopotamia Branch of the B.M.A. in 1938. Early in 1941 he re-entered the R.A.M.C. as temp. lieut. and was in Lebanon when the Allies entered the country to remove the threat of Axis domination. His contributions to medical literature included four articles in this *Journal*.

Lieut.-Col. WILLIAM PEET HOGG, M.C., I.M.S., died at Poona on Nov. 5. He was born on Feb. 29, 1888, and was educated at the University of Aberdeen, where he graduated M.B., Ch.B. in 1912. He also took the D.T.M.&H. of the London Colleges in 1920. He entered the R.A.M.C. in Oct., 1914, becoming capt. a year later. In 1916 he was appointed capt. in the I.M.S. and became lieut.-col. in 1934. He served in the war of 1914-18, in Iraq 1917-19, was mentioned in dispatches, and was awarded the M.C. and bar. Most of his Indian service was spent in the Political Department, where he was surgeon to the Mewar Agency, Rajputana, and superintendent of hospitals and gaols in that agency and later chief medical officer and inspector-general of prisons, Baluchistan. He had been a member of the B.M.A. since 1923.

Lieut.-Col. SUKUMAR NAG, I.M.S., who is included as "died" in an India Office Casualty List published on Nov. 26, was born on Nov. 13, 1890, and was educated at the University of Calcutta, where he graduated M.B. in 1915. He also took the F.R.C.S.Ed. and the D.T.M.&H. of the English Royal Colleges in 1924. Entering the I.M.S. in 1920 he became lieut.-col. in 1935.

*Wounded.*—Capt. R. D. I. Beggs, R.A.M.C., War Subs. Capt. P. T. Savage, R.A.M.C.

*Missing.*—Capt. C. R. Robson, R.A.M.C.

# Obituary

We regret to announce the sudden death of Dr. MARY JANET PIRRET of West Cromwell Road, S.W., who had been a member of the B.M.A. from the time of graduation. She was born in Glasgow on June 2, 1878, daughter of the Rev. David Pirret, and from Hillhead High School went to study medicine at Queen Margaret College, Glasgow. She graduated M.B., Ch.B. of Glasgow University in 1901, M.D. in 1906, and took the Cambridge D.P.H. in 1911. Dr. Pirret's first house appointment was at the Mater Infirmorum Hospital, Belfast; she was then in turn house-surgeon to the Clapham Maternity Hospital and to the Chorlton Dispensary, Manchester, and assistant M.O. at the Crichton Royal Institution, Dumfries. In 1911 she was appointed school medical officer for the county of Wigtown. She came to London to undertake part-time public health work under the L.C.C., and had been M.O. for maternity and child welfare for the borough of St. Pancras.

Dr. ANDREW STEWART TINDAL, who died on Nov. 22 at his home in Newlands Road, aged 75, was one of the best-known practitioners in the south side of Glasgow. He graduated M.B., C.M. of Glasgow University in 1889, proceeded M.D. in 1892, and was elected a Fellow of the Royal Faculty of Physicians and Surgeons of Glasgow in 1905. After holding house appointments he joined his father in general practice, and later became

senior partner of the firm. Dr. Tindal was at one time an assistant physician on the staff of the Victoria Infirmary, visiting anaesthetist to the Western Infirmary, the Royal Hospital for Sick Children, and the Glasgow Dental Hospital, and had been assistant physician to the Belvidere Fever Hospital. He joined the British Medical Association in 1892.

Dr. FREDERICK WILLIAM STEWART, who had been a member of the B.M.A. for nearly 40 years, died on Nov. 29 at Beckenham, where he had long practised. He was born at Ballymena, Co. Antrim, in April, 1878, and had a distinguished career as a medical student at Queen's College, Belfast, before the University received its Charter. He graduated B.A. of the old Royal University of Ireland in 1899, M.B., Ch.B., B.A.O. in 1902, and M.D. in 1906. After holding demonstratorships at Queen's he was for a few years in the mental hospital service in Kent, and then settled in practice at Beckenham, where he filled a number of public appointments. During the last war he served with a temporary commission in the R.A.M.C. as mental specialist to the 50th General Hospital, B.E.F. In 1907 he published jointly with Sir Frederick Mott a paper on chronic lead encephalitis.

Dr. WALTER CARR (writes Dr. Marion S. Linton), whose death was recently reported in this *Journal*, was a great teacher. As medical tutor to the women students at the Royal Free Hospital he taught us, with reiterated patience and great thoroughness, that in clinical medicine first things were first. We were a little afraid of him—his comments were caustic—but, at a time when medical women were still "on sufferance," he gave us of his best, and there must be many of my day and generation to share the feeling of deep gratitude, respect, and affection for all he did for us.

We regret to announce the death of Dr. JOHN M. T. FINNEY, sen., professor of clinical surgery at Johns Hopkins University and honorary Fellow of the Royal College of Surgeons of England, aged 78.

According to a Reuter message Prof. ALBERT DUSTIN, formerly Rector and Dean of the Faculty of Medicine at the University of Brussels, has died at the age of 58.

# Medical Notes in Parliament

### Venereal Disease

Mr. BROWN stated on Nov. 19 that the Ministry of Health had already received much help from the Press and the B.B.C. in the publicity campaign on venereal diseases. He was asking the responsible local authorities to make more extensive use of the services of the Central Council for Health Education, which included pamphlets, films, and lectures, and to advertise local facilities for treatment by the wider exhibition of posters and otherwise. The campaign's development and success depended largely on the extent to which the Press and other leaders of public opinion, including M.P.s, gave it active and continued support.

On Nov. 24 Mr. BOOTHBY asked the Minister of Health whether his attention had been drawn to the serious increase of venereal disease in this country and to the inadequate measures so far taken to combat it; and whether he would give immediate directions to the Departments concerned to neglect no step to encourage the use of every kind of preventive measure and to stop the spread of infection. Miss HORSBRUGH said the increase of venereal disease had been receiving the close attention of the Minister of Health in consultation with the Secretary of State for Scotland. A Defence Regulation for combating this problem had been laid before the House. Mr. BOOTHBY asked if Miss Horsbrugh was aware that this Defence Regulation was quite inadequate to combat this problem. Was it the intention of the Government to initiate a propaganda campaign throughout the country? Miss HORSBRUGH referred to a previous reply on Nov. 19, which stated what publicity and further educational remedies were to be undertaken. Dr. SUMMERSKILL asked if the Department had considered compulsory notification, which was a course advocated by many medical authorities. Miss HORSBRUGH said that the Department had considered many schemes, and the scheme now before the House in this regulation was that for which it was thought desirable to get sanction from the House. Mr. BOOTHBY said he would raise the matter on the motion for the adjournment at an early opportunity.

### Diphtheria Immunization: Publicity

Sir FRANCIS FREMANTLE on Nov. 19 invited Mr. Brown to arrange for simple leaflets and advice on diphtheria immunization to be given by registrars of births and by maternity and child welfare officers to all parents attending their offices and clinics. Mr. BROWN replied that mothers attending welfare centres had for some time been urged to have their children immunized against diphtheria. He had recently asked that health visitors should be taken off less urgent routine duties to give similar advice in the homes. On the suggestion that registrars of births should be asked to advise parents in this sense, Mr. Brown commented that as most medical authorities regarded the first birthday as the best time to immunize a child he doubted whether this method would be effective.

### Small-pox in Edinburgh

Mr. JOHNSTON, replying to Mr. Viant on Nov. 24, said that 24 confirmed cases of small-pox were associated with the Edinburgh outbreak, and one other case was in hospital under observation. Nineteen cases were or had recently been patients in a medical institution or an associated convalescent home, three were medical students attending at the institution, and two were contacts of the original cases. In the remaining case no connexion with the institution had so far been traced. Four of the patients had died.

### Rehabilitation after Loss of Limbs

Miss WARD on Nov. 24 asked what were the arrangements for the rehabilitation of Service men and civilians who lost limbs as a result of war service or enemy action. Sir WALTER WOMERSLEY replied that after active stump treatment had been completed and the artificial limb supplied, the patient was taught how to make the best use of his artificial limb. During this period of instruction, which varied from case to case, the man or woman might be either an in-patient or an out-patient of one of the Ministry's hospitals. Often, particularly in the case of arm amputations, the individual preferred to be an out-patient and live at home. Where this did not interfere with his treatment, he did not feel justified in compelling him to become an in-patient. In addition, while the patient was under hospital treatment, officers of the Ministry of Labour discussed with him and the surgeon-in-charge the question of future employment. Where required, vocational training was given, and, in the case of arm amputations, his Department provided any appliances necessary for the trade or calling which the patient intended to pursue. Virtually all amputation cases of the present war, whose treatment had been completed, were either in full employment or would be on the completion of their vocational training.

The Minister also said that he was considering whether civilians who become totally disabled as a result of war service or enemy action should be eligible for a constant attendance allowance in cases of helplessness in addition to the war pension.

### Accidents and Sickness in Miners

Major LLOYD GEORGE, replying on Nov. 24 to Mr. Gallacher, who asked why no report had been issued by the Chief Inspector of Mines in view of the high accident and sickness rate among miners and the effect this was having on production, said that a general decision had been taken to suspend for the time being the issue of departmental reports not immediately essential to the war effort. Information and statistics relating to accidents in mines had, however, been given from time to time to the House and elsewhere. In addition, in each year since the war, the divisional inspectors of mines had circulated to collieries in their respective divisions details of accidents during the previous year, together with suggested means for effecting improvement. The figures for the present year were considerably lower than those for the corresponding period of 1941.

In reply to Mr. J. Griffiths the Minister said that 1,827 persons in the South Wales coal mines were certified in 1938 by examining surgeons in respect of scheduled industrial diseases. The figures of persons injured (disabled for more than three days) by accidents at mines under the Coal Mines Act in the South Wales and Monmouth coal fields during 1938 were:—Fractures: thigh (femur), 33; leg (tibia or fibula), 267; arm and forearm, 85; spine, 30; pelvis, 27. Injuries and/or other fractures: head, 1,789; arm, 1,959; hand, 8,302; thigh or leg, 4,060; foot, 3,272; eye, 703; back, 2,165; other parts of body, 2,146. Total, 24,838.

### Doctors for Appeal Tribunals

Sir WALTER WOMERSLEY on Nov. 26 assured Sir Francis Fremantle that the Central Medical War Committee was consulted by the Medical Personnel (Priority) Committee when the latter body was asked to consider the availability of medical men for Pensions Appeal Tribunals. He himself had consulted the Medical Personnel (Priority) Committee on Oct. 24, 1941. The Secretary of the B.M.A. was formally consulted in the matter, in his capacity as Secretary of the Central Medical War Committee, in regard to the medical requirements for the staffing of Pensions Appeal Tribunals.

Sir FRANCIS FREMANTLE reported that the British Medical Association said it had received no formal request for the provision of medical men. Sir WALTER said the Ministry of Pensions was always applying and the answer had been that the personnel was not available. He kept in touch with the Service Departments, and in the case of every medical man who was discharged from them he considered whether he would be suitable. He had advertised in the medical press. The replies showed the difficult position in which he was. He was willing to receive applications from anyone or to consult anyone.

### Tuberculosis Mortality

Mr. BROWN stated on Nov. 26 that the numbers of deaths from tuberculosis (all forms) in London and in the remainder of England and Wales during certain years were as follows—the figures being inclusive of deaths of non-civilians before the outbreak of war and exclusive thereafter:

| | London | Remainder |
|---|---|---|
| 1938 | 2,861 | 22,634 |
| 1939 | 2,875 | 22,722 |
| 1940 | 3,005 | 24,866 |
| 1941 | 2,895 | 25,378 |

The corresponding death rates per 1,000,000 population in 1938 and 1939 were 704 and 760 in London and 609 and 606 in the remainder of England and Wales. For 1940 and 1941 comparable rates were not available on account of the heavy evacuation of London residents which attended the outbreak of war. Considerable numbers of London residents who were then in institutions outside London and died there during 1940 and 1941 would continue to count as London deaths, while a large proportion of the population had been transferred and credited to areas outside London. Rates obtained by relating such deaths and populations would be entirely misleading.

*Diphtheria Immunization.*—On Nov. 10 Mr. ALFRED EDWARDS asked the Minister of Health whether he was aware that a pamphlet recently circulated to all members of the House of Commons charges the Ministry with misrepresentation and evasiveness in its claims for diphtheria immunization, and if he would appoint an impartial committee to examine those allegations. Mr. ERNEST BROWN said he had seen the pamphlet. The case for immunization against diphtheria was fully supported by medical opinion and practical experience in other countries, and as advocacy of immunization had been the Government's considered policy for some time past he did not think there would be any advantage in appointing a committee.

*Pasteurization of Milk.*—On Nov. 17 Mr. ERNEST BROWN informed Col. Carver that the Minister of Food, with whom he was in close consultation on the subject, was taking all practicable steps to extend pasteurization of milk. They were also consulting on the best allocation among children of the supplies of dried milk available.

*Lung Disease in Coal Miners.*—On Nov. 17 Sir WILLIAM JENKINS asked the Home Secretary what action he had taken to implement the report of the Medical Research Council into lung diseases among coal miners in South Wales; if he was aware that the disease was on the increase; and if he would take steps forthwith, as the matter was vital for the mining industry. Mr. HERBERT MORRISON said that the Minister of Fuel and Power and he were fully alive to the urgency of this matter, and were anxious to deal with it at the earliest date possible. Consultations with a view to securing agreement had been in progress with the representative bodies concerned, but were not yet complete.

*Surgical Belts as Rationed Clothing.*—On Nov. 17 Sir WILLIAM DAVIDSON asked the President of the Board of Trade whether he was aware that surgical abdominal belts had recently been included in the clothes rationing scheme, thereby involving hardship to people who were obliged to wear such appliances; and whether he would consider the exclusion of surgical belts from the clothes rationing scheme on the production of a medical certificate. Mr. DALTON said that most kinds of surgical abdominal belts had been included in the clothes rationing scheme from the beginning. But, in view of the serious shortage of rubber, steel, and other materials used in making such belts, we had recently had to include all types, with the exception of maternity belts. He was prepared, however, to consider sympathetically any individual cases where the surrender of coupons caused real hardship.

*Rushcliffe Committee on Nurses' Salaries.*—Mr. ERNEST BROWN stated on Nov. 19 that the last nominations for the Rushcliffe Committee on nurses' salaries were received early in November, 1941. There had been approximately 8 meetings of the full committee, 15 meetings of the employers' panel only, and 12 of the nurses' panel only. Many of the meetings extended over more than one day. Mr. Brown added that he awaited replies from some of the organizations which he had consulted on the future distribution of nurses.

*Housing.*—During the debate on the Address Mr. ERNEST BROWN said 100,000 families continued to live in houses which, three years ago, were legally condemned as unfit. The Government had to concentrate on first-aid repairs to houses damaged by enemy action, which numbered 2,750,000, apart from damage to glass. On the whole it had been found possible to deal with movements of population, but there was dangerous overcrowding in some districts. He and his colleagues were examining the possibility of making available labour and material for the extended repair of empty houses. He hoped that before the war ended they could start a modest problem of building new houses.

*Vaccine Lymph.*—Mr. ERNEST BROWN said on Nov. 24 that he had recently made an Order modifying the tests for the purity of vaccine lymph. The new Order allowed an increase in the total number of living bacteria and other visible micro-organisms, but it provided safeguards against harmful micro-organisms at least equal to those previously prescribed.

*Pre-natal Child Allowances.*—Sir JOHN ANDERSON announced on Nov. 26 variations in the pay and allowances of the Forces. He said the Government had decided that children's allowances would be payable to the wives of sailors, soldiers, and airmen at the appropriate rate by the Service authorities from a date three months before the expected date of birth. Claims would have to be supported by medical certificates. Arrangements were being made to put this change into force from Dec. 1.

*Fees for Vaccinations in Glasgow.*—On Dec. 1 Mr. JOHNSTON informed Mr. Alfred Edwards that the amount paid by the Glasgow Corporation to doctors and medical students for vaccinations performed at the special vaccination stations opened in Glasgow on July 1 was £3,316. The doctors and medical students were paid by fees on a sessional basis, doctors receiving a fee of 31s. 6d. and medical students 10s. 6d. per session of 2½ hours.

*Regulation 33B.*—On Dec. 1 Mr. ERNEST BROWN, replying to Mr. Pethick-Lawrence, said that under paragraph (3) of Regulation 33B a special medical practitioner could give a direction to a contact to attend a particular hospital. It was, however, open to a contact, on giving due notice, to transfer to another special practitioner at any time before the course of treatment was completed.

### *Notes in Brief*

Lord Addison has been re-elected leader of the Labour Peers for the coming session in the House of Lords.

# Medical News

The British Medical Students Association has arranged a conference at B.M.A. House, London, from Dec. 18 to 20—open to all medical students. Among the speakers will be the Minister of Health, Sir Charles Wilson, P.R.C.P., Prof. J. A. Ryle, and Dr. Charles Hill. There will be a dance on the evening of Saturday, Dec. 19, open to all members of the medical and nursing professions. Tickets (congress 1s. 6d., dance 3s. 6d.) from the secretary of the B.M.S.A., B.M.A. House, Tavistock Square, W.C.1.

The first annual general meeting of the Anglo-Soviet Medical Council will be held on Thursday, Dec. 17, at 4.30 p.m., at the Royal Society of Medicine, 1, Wimpole Street, W.

Prof. J. W. Munro, D.Sc., will give a discourse on "The Place of Research in the Control of Injurious Insects" at the Royal Institution, 21, Albemarle Street, W., on Friday, Dec. 18, at 5 p.m.

The American Gastroenterological Association will publish on Jan. 1, 1943, the first number of a new monthly journal to be called *Gastroenterology*. The subscription price will be $6.00 a year. The editorial board invites clinical and investigative contributions which are of interest to the general practitioner as well as the specialist, and which deal with the diseases of digestion and nutrition, including their physiological, biochemical, pathological, parasitological, radiological, and surgical aspects. Manuscripts should be sent to Dr. A. C. Ivy, *Gastroenterology*, 303, East Chicago Avenue, Chicago, Illinois. Letters regarding subscriptions and business matters should be addressed to Mr. R. S. Gill, Williams and Wilkins Company, Baltimore, Maryland.

As only a small percentage of children are receiving the cod-liver oil and fruit juices that are available at food offices and welfare centres a publicity campaign to impress upon mothers the importance to children of these vitamin supplements is to be started by the Ministry of Health and Ministry of Food. Cod-liver oil will shortly be available to expectant mothers and also concentrated orange juice during the last six months of pregnancy.

Prof. F. E. Tylecote, M.D., F.R.C.P., has been elected chairman of the Manchester Public Health Committee. He was also recently elected President of the Royal Manchester Institution (founded 1823).

The Swedish Medical Society of Stockholm has presented to Dr. Alfred Vogt, professor of ophthalmology at Zurich, the Gullstrand Medal, which is awarded every ten years to the most eminent ophthalmologists.

Prof. H. Mooser, director of the Institute of Hygiene of Zurich University, has been created an honorary member of the Royal Academy of Medicine of Barcelona for his researches on typhus fever recently made in Spain.

The Minister of Health (Circular 2707) has decided to extend to March 31, 1943, the period during which local authorities may submit arrangements made by them under the Cancer Act, 1939.

# Universities and Colleges

## UNIVERSITY OF OXFORD

In a Congregation held on Nov. 21 the following degrees were conferred:

D.M.—H. W. Davies, T. W. Lloyd (in absence).
B.M., B.Ch.—C. O. Carter.

## ROYAL COLLEGE OF PHYSICIANS OF EDINBURGH

At the annual meeting of the College, held on Dec. 3, Dr. Charles McNeil was re-elected President and Dr. L. H. F. Thatcher, Dr. A. Murray Drennan, Dr. A. Fergus Hewat, Dr. D. M. Lyon, Dr. A. Graham Ritchie, and Dr. A. Rae Gilchrist were elected to form the Council of the College for the ensuing year. Dr. A. Fergus Hewat was nominated Vice-President.

## FACULTY OF RADIOLOGISTS

The following candidates have satisfied the Fellowship Board at the examination for the Fellowship of the Faculty: *Radiodiagnosis.*—G. Friedlaender, M.D., D.M.R. *Radiotherapy.*—I. G. Williams, M.B., F.R.C.S., D.M.R.E.

# EPIDEMIOLOGICAL NOTES

### Discussion of Table

In *England and Wales* during the week there was a general rise in the notifications of infectious diseases. There were 1,085 more cases of measles, 91 of whooping-cough, 89 of acute pneumonia, 61 of diphtheria, 34 of scarlet fever, 18 of cerebrospinal fever. The incidence of dysentery fell by 31, and of typhoid by 7.

The rise in measles was fairly general throughout the country, but highest in the North. The counties reporting the largest increases were Derbyshire 229, Cheshire 107, London 118, Durham 100, Leicestershire 77, Lancashire 71.

The incidence of scarlet fever tended to fall in the South, and the only rises of note were those of Lancashire, Yorks West Riding, and Staffordshire, with 51, 47, and 42 more cases than last week.

The notifications of diphtheria were the largest since the beginning of January. During the present year about 40% of the cases have been reported from the three counties of Lancashire, Yorks West Riding, and Durham; during the week reviewed 188, 128, and 107 notifications came from these counties.

The largest increases in whooping-cough were those of Lancashire 54, and Yorks West Riding 42.

The incidence of dysentery has fallen by 60% during the past four weeks, but is still twice as high as during the middle of August. Lancashire, with a rise from 9 to 24 cases, distributed through eight administrative areas, heads the list: 11 further cases were reported from the existing outbreaks in each of the counties of Yorks West Riding and Yorks North Riding. Ten boroughs contributed the 18 cases notified in London.

In *Scotland* there was a mounting incidence of most infectious diseases, chiefly of acute primary pneumonia 61 cases, of diphtheria 49, and of scarlet fever 38. The largest local variation was the increase in the cases of pneumonia in Glasgow from 91 to 137.

In *Eire* poliomyelitis for the fourth consecutive week showed a slight rise; there were 25 cases from sixteen districts.

In *Northern Ireland* about half of the cases of infectious diseases were reported from Belfast, with the exception of whooping-cough, of which 24 of the 25 cases were recorded in Lisnaskea rural district.

### Small-pox

Two further cases of small-pox were confirmed in Edinburgh on Nov. 30. The number of persons vaccinated in this city now exceeds 165,000. Another death has occurred from the recent outbreak at Methilhill; this brings the total of small-pox deaths in Fife to 8.

A case of small-pox has been reported from the London borough of Hampstead.

### Returns for the Week Ending November 28

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,970, whooping-cough 1,263, diphtheria 861, measles 10,649, acute pneumonia 766, cerebrospinal fever 77, dysentery 163, paratyphoid 4, typhoid 13, small-pox 1.

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# INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Nov. 21.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

*Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for:* (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

| Disease | 1942 (a) | (b) | (c) | (d) | (e) | 1941 (Corresponding Week) (a) | (b) | (c) | (d) | (e) |
|---|---|---|---|---|---|---|---|---|---|---|
| Cerebrospinal fever | 68 | — | 21 | 3 | 3 | 104 | 5 | 28 | — | 6 |
| Deaths | | — | 4 | | | | 1 | 1 | | |
| Diphtheria | 1,001 | 49 | 262 | 86 | 29 | 1,043 | 34 | 262 | 58 | 37 |
| Deaths | 26 | 3 | 3 | 1 | — | 43 | 1 | 6 | 1 | — |
| Dysentery | 117 | 18 | 67 | — | — | 204 | 12 | 45 | — | — |
| Deaths | | | | — | — | | | | — | — |
| Encephalitis lethargica, acute | 2 | — | — | — | — | 5 | — | 1 | — | — |
| Deaths | | 1 | | | | | — | — | | |
| Erysipelas | | — | 69 | 17 | 2 | | — | 60 | 9 | 6 |
| Deaths | | — | | | | | 1 | — | | |
| Infective enteritis or diarrhoea under 2 years | | | | 62 | | | | | | |
| Deaths | 57 | 10 | 12 | 14 | 4 | 37 | 3 | 19 | 19 | 7 |
| Measles | 8,816 | 362 | 428 | 38 | 40 | 671 | 50 | 19 | 61 | 4 |
| Deaths | 7 | 1 | 1 | 1 | 1 | 2 | — | — | — | — |
| Ophthalmia neonatorum | 83 | 4 | 19 | — | 1 | 78 | 1 | 11 | 2 | — |
| Deaths | | | | | | | | | | |
| Paratyphoid fever | 5 | 2 | 1 | — | | 30 | 5 | — | — | |
| Deaths | — | — | — | — | — | — | — | — | — | |
| Pneumonia, influenzal* | 645 | 36 | 7 | — | 12 | 997 | 44 | 14 | 4 | 5 |
| Deaths (from influenza) | 21 | 1 | 1 | — | — | 38 | | 5 | 2 | — |
| Pneumonia, primary | | — | 226 | 19 | | | 33 | 226 | 17 | |
| Deaths | | | | 13 | | | | | 9 | 11 |
| Polio-encephalitis, acute | 1 | — | | | | 1 | — | | | |
| Deaths | | — | | | | | — | | | |
| Poliomyelitis, acute | 15 | 1 | 1 | 25 | 2 | 21 | — | 1 | 6 | — |
| Deaths | | — | | | | | — | — | | |
| Puerperal fever | — | 3 | 17 | 2 | — | 1 | 1 | 15 | 4 | — |
| Deaths | | — | | | | | — | | | |
| Puerperal pyrexia | 137 | 4 | 13 | | — | 135 | 4 | 10 | | 4 |
| Deaths | | | | | | | | | | |
| Relapsing fever | — | — | | | — | — | — | | | — |
| Deaths | | | | | | | | | | |
| Scarlet fever | 2,914 | 166 | 430 | 75 | 66 | 1,352 | 36 | 247 | 59 | 44 |
| Deaths | 2 | — | — | — | 1 | — | — | — | 2 | — |
| Small-pox | — | — | 3 | | — | — | — | — | | — |
| Deaths | | | | — | — | | | — | — | — |
| Typhoid fever† | 6 | — | 4 | 11 | 4 | 9 | — | 1 | 7 | 2 |
| Deaths | | — | — | — | — | | — | | | |
| Typhus fever | — | — | — | 8 | — | — | — | — | — | — |
| Deaths | | | | — | — | | | — | — | — |
| Whooping-cough | 1,246 | 92 | 33 | 79 | 25 | 2,066 | 177 | 88 | 57 | 5 |
| Deaths | 9 | 1 | — | 2 | — | 8 | 2 | 3 | — | — |
| Deaths (0–1 year) | 342 | 42 | 65 | 43 | 14 | 338 | 23 | 80 | 40 | 23 |
| Infant mortality rate (per 1,000 live births) | | | | | | | | | | |
| Deaths (excluding stillbirths) | 4,439 | 710 | 589 | 231 | 124 | 4,473 | 618 | 647 | 192 | 137 |
| Annual death rate (per 1,000 persons living) | | | 13·3 | 15·4 | ‡ | | | 14·1 | 12·7 | ‡ |
| Live births | 5,742 | 670 | 705 | 369 | 253 | 4,937 | 410 | 770 | 306 | 215 |
| Annual rate per 1,000 persons living | | | 14·6 | 24·6 | ‡ | | | 15·7 | 20·3 | ‡ |
| Stillbirths | 188 | 21 | 27 | | | 195 | 22 | 34 | | |
| Rate per 1,000 total births (including stillborn) | | | 37 | | | | | 42 | | |

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes paratyphoid A and B for Northern Ireland.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.
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## QUERIES AND ANSWERS

### Sulphonamides for Leukaemia?

Dr. J. H. DOUGLAS WEBSTER (London, W.1) writes: In reply to Dr. J. Harton Rayner (Dec. 5, p. 684) a new untreated case of myeloid leukaemia was treated with sulphapyridine (M & B 693) about three years ago (in collaboration with Dr. C. E. Lakin and Dr. Lionel Whitby); two attempts were made, but each had to be abandoned owing to general toxic symptoms; the white count dropped, but rose immediately the drug was stopped. A remission followed *x*-ray treatment. The trial did not encourage a repetition in other cases. (A note was published on the case in my *Periodicity of Cancer, Leukaemia and Allied Tumours*, 1940, p. 144.)

### Death by Lightning

Dr. STEFAN JELLINEK (Oxford) writes: Dr. H. M. Stanley Turner (Oct. 24, p. 503) rightly stresses the "potential importance" of the "electrical traces," a few examples of which I was able to demonstrate in the course of an address to the Royal Society of Edinburgh in 1936. These are alterations in the tissues characterized by certain geometrical patterns. Their decisive importance has already been proved in a number of legal actions, such as the case of a young girl of 18 in which homicide or an attempt at suicide was suspected or that of a country house destroyed by ? lightning or arson. But apart from their interest to the medical jurist, electrical traces are of importance in a general legal sense. A Dutch plane crashed near Baghdad in 1934. Passengers and the crew were killed and drunkenness of the pilot was alleged as a cause of the disaster. A little while later word went round that the plane had been struck by lightning. I was approached by the Koninklijke Luchtvaart Maatsch. voor Nederland en Kolonien with a view to establishing the truth of these rumours. The debris of the plane was examined according to my instructions. "Electrical traces" were in fact found and their identity was proved with traces present on objects kept in my electropathological museum in Vienna and known to have been damaged by lightning. Thus the truth was established and the honour of the dead pilot restored. Once found, no doubt concerning the significance of such "traces" can be entertained, since they can be reproduced experimentally. In 1937 I published my findings, including photomicrographs of geometrical deformities in cell nuclei (larva of *Salamandra maculosa*), at the Académie des Sciences in Paris (*C. r. Acad. Sci.*, Paris, 1937, p. 1962). Finally, "electrical traces" are of clinical and therapeutic significance; they may be observed after electrocautery by the surgeon and following the application of ultra-short waves by the physician. Dr. Alfred V. Dill (Oct. 10, p. 426) very rightly draws attention to anti-lightning safety devices in aeroplanes. It is possible that another examination of the bomber concerned would result in a different interpretation. The "traces" are not always visible with the naked eye. Sometimes microscopical investigation is necessary and able to reveal startling pictures.

### Income Tax

*Practice in Commission*

"Aldershot" entered the R.A.M.C. in July, 1942; continuing receipts from practice are small, including part fees from a colleague. Shall he claim (*a*) that the practice shall be regarded as ceased or (*b*) the relief to diminshed earned incomes?

*** Admittedly the "civil" receipts are likely to be small, but "Aldershot" might find it difficult to establish that his former practice had ceased, and the alternative relief will apparently give him substantially the same advantage. Further, it is likely to have the additional attraction that it will not prevent the continuous operation of the previous year's basis in the future, an obvious advantage in the first year of "Aldershot's" return to full civil work.

## LETTERS, NOTES, ETC.

### Working for a Salary in the S.M.S.

Dr. REGINALD LAWRENCE (Wakefield) writes: I must controvert the implication of Dr. Una Westell's letter (Nov. 7, p. 561) that a salaried worker inevitably deteriorates. School medical inspection, especially if done on five days a week, is the most deadening occupation in the practice of medicine, yet some members of the service never fail to produce some original work. Few people outside those immediately interested read the annual reports of the Chief Medical Officer to the Board of Education; if they did they would be surprised to see the list of original inquiries undertaken and carried out by members of this salaried service. In contrast to this intellectual activity I can point to voluntary hospitals of which the staff have not made an original contribution to medical literature for twenty years. The School Medical Service, in spite of working for a salary, has caused two quiet but real revolutions. (1) The observations of its members, as shown in the massed statistics of the Chief Medical Officer, have shown that operations for the removal of tonsils and adenoids which were formerly undertaken cheerfully (and profitably) must in many cases have been unnecessary. This alteration in medical opinion is, I believe, due to the irrefutable evidence that in many cases these overgrowths of lymphoid tissue will disappear without leaving any evil legacy. (2) The School Medical Service has brought the subject of nutrition to its proper place—the forefront of medical endeavour—and I have no hesitation in saying that members of this salaried service know more about the clinical aspect of subnormal nutrition than any other group of medical practitioners.

### Unreliable Vaginal Pessaries

Dr. LILIAS M. BLACKETT JEFFRIES (Hove, Sussex) writes: Within the last few weeks there has been a marked increase of patients who have started an undesired pregnancy in spite of using quinine pessaries. I am told that these are widely advertised, that "the Army" has complete confidence in them, and, finally, that "the medical officer" recommended them as reliable. It is surely agreed among the profession that safety can only be assured by the use of both an occlusive pessary and a spermicidal paste or tablet together. I write in the hope that readers of the *Journal* will use their influence to prevent the distress and danger which are following the public's misplaced confidence in medicated vaginal pessaries.

### Corrigendum

By a printer's error the word "no" was omitted between the words "given" and "time" in the third paragraph of Dr. K. R. Ogilvie's letter on the treatment of gonorrhoea (Nov. 28, p. 648).

## MEDICINE 100 YEARS AGO

Extract from a letter by Dr. John Ashburner, of 55, Wimpole Street, published under the heading "Physiology of the Nervous System" in the *Provincial Medical Journal* of Dec. 10, 1842:

"Gentlemen,—In addressing to you the following brief remarks, I make an effort to stem the torrent of narrow and illiberal feeling which appears to pervade the medical profession. In your notice respecting the proceedings of the Royal Medical and Chirurgical Society, you 'regret extremely that the society should have lent itself to a proceeding so unworthy of its dignity and reputation.' And what is that proceeding? The reading of a paper presented to the attention of a society by two gentlemen, containing an account of a case of 'amputation of the thigh, *alleged* to have been performed during Mesmeric sleep.' Are medical men to forget that they belong to a *royal* association? Are the courtesies of life between gentlemen and gentlemen to be lost sight of, when folks step within the limits of a medical circle? Are surgeons who are esquires, and barristers who hold an equal rank, to be flouted with the insinuation of falsehood, because they dare to relate facts which militate against the narrow prejudices of would-be philosophers? Do you know, Gentlemen, what impression the expressions you have used make upon impartial men that belong not to our profession?

"I happen to be no 'advocate of the delusion,' as you please to term it, of Mesmerism. I ought with shame to say that I have derided, perhaps with much want of courtesy, the accounts I have heard of the wonders of animal magnetism. I have seen enough to know that I was wrong—that there are connected with the subject facts which demand inquiry; and inquiry they must have, whether you like it or not. I tell you, Gentlemen, and all who oppose the investigation of truth, that time marches past you, and that the world will not wait until it suits the high mightiness of doctor bodies to lay aside their paltry feelings. Men of small minds will be pitied, and men of moral courage will not shrink from inquiry because the objects of their pity may presume to bow-wow at them."